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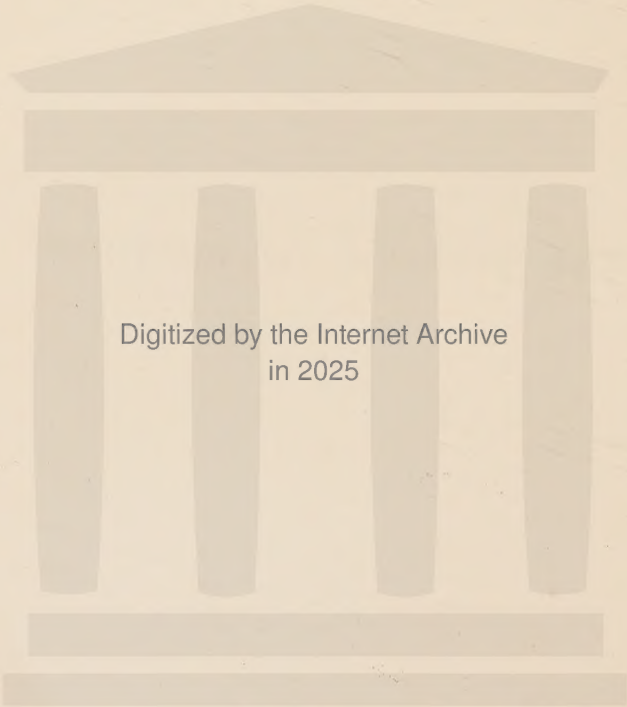
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BY

F. MAX MÜLLER

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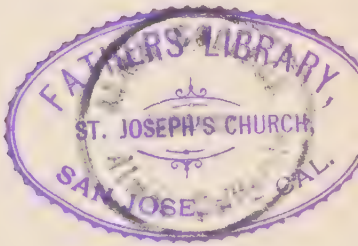
NO LANGUAGE WITHOUT REASON

VOL. II.



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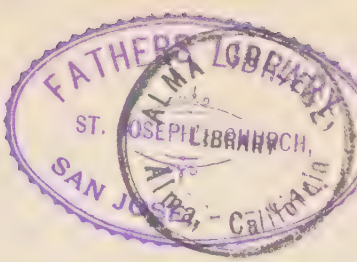

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THE SCIENCE OF THOUGHT.

CHAPTER VII.

THE ROOTS OF SANSKRIT.

Roots of Aryan languages.

It may be objected, no doubt, that all that has hitherto been suggested on the origin of roots and concepts is theory only, or a mere outline of the general purposes which the roots of any language might be made to serve, provided always that such roots exist, and that they possess the peculiar character which has been ascribed to them. It is easy to say that all roots must express acts, and more particularly such simple acts as constitute the daily occupations of a primitive society. The question is, Is it so, and can we by historical evidence prove that it was so in any of the languages best known to ourselves?

In order to answer this question perfectly, we ought, if possible, to analyze the dictionary of a whole family of languages, the Semitic or Aryan, and show that the original meanings of their roots are really such as we have postulated. Hebrew has been reduced to about 500 roots,[1] but it would be desirable that some professed Semitic scholar should undertake to collect the roots for the whole Semitic family in its widest sense.

[1] Renan, *Histoire des Langues Sémitiques*, p. 138.

An attempt has indeed been made to collect the roots of the whole Aryan family, but the results are as yet so uncertain that it would be unsafe to base any arguments on so changeable a foundation. Benfey counted 1706 roots in Sanskrit, 226 of classes ii, iii, v, vii, viii, ix; 1480 of classes i, iv, vi, x, the last comprising 143 roots. For Gothic, Benloew admitted 600 radicals, for modern German only 250, while Grimm has collected of strong verbs alone 462 in the Teutonic family. For Slavic, Dobrowsky gave 1605 radicals. Pott thinks that a language has on an average about 1000 roots, but Fick has reduced the number of roots necessary to account for the whole wealth of Aryan words to a much smaller number. He admits as primitive roots those only which consist

1. of one vowel;
2. of the vowel a and consonant (ad, ap, ar);
3. of a consonant or double-consonant and the vowel a (da, pa, sa, sta, spa, sna).[1]

It stands to reason that when there is so much doubt as to what is the exact number of roots in any single language, and what is to be considered as a typical root or as a mere variety, there must naturally be much greater doubt when we have to determine what are the primitive phonetic elements out of which, according to general phonetic laws, a whole family of languages could have fashioned its dictionary. Fick's attempt to do this for the Aryan family is very creditable, but it goes too far.

This being the case, it is best, I think, to begin with an examination of the roots of one of the Aryan languages only, with a view of ascertaining their

[1] Fick, *Wörterbuch der Indo-germanischen Sprachen* (1870), p. 939.

original form and meaning. The objection that we cannot properly speak of roots except during a period when the Aryan languages were not yet separated is not tenable. The radical period of Aryan speech must no doubt be placed before the agglutinative and inflectional (I still hold to these three stages of evolution), and in that sense all roots may be said to be Aryan, and not either Sanskrit, Greek, or Latin. But we have only to suppose that all Aryan languages, except Sanskrit, had become extinct, and nothing would prevent us in that case from drawing up a list of Sanskrit roots.

The chief reason, however, why I prefer to try the experiment which we have to try, on the roots of Sanskrit, is that we possess for Sanskrit a very complete, perhaps more than complete list of roots (dhâtupâṭha) which is ascribed to a very ancient grammarian, Pâṇini, whom I place between the time of Buddha and Alexander the Great, though I have little doubt that much of the work ascribed to him must have been prepared for him by earlier grammarians. To Hindu grammarians at all events belongs the credit of having for the first time conceived the idea of a root, and of having made as complete a collection of the constituent elements of their language as it was possible to make in their time. If therefore we can prove our point, viz. that all the important roots of Sanskrit are expressive of simple primitive acts, we have at least a strong presumption in favor of our theory that the roots of all Aryan languages, possibly of the Semitic and Turanian languages also, will show the same character. We must be satisfied with small and imperfect beginnings, and though those who lead the way into a new field of re-

search are sure to be left behind by those who follow in their track and cannot escape the blame of having done the work that has to be done very imperfectly, all pioneers must take their chance, and if they are knocked down must take comfort in the thought that without them probably no advance whatever would have been made.

Pâṇini's Dhâtupâṭha.

Before we begin to examine Pâṇini's list of roots, we must first consider his position in the history of the language and literature of India. Like his grammar, his collection of roots stands on the very threshold of what is commonly called Sanskrit literature. If we except the Vedic literature, there is nothing more ancient in India than Pâṇini, and his authority has never been questioned for the last two thousand years. During the Vedic period Pâṇini had precursors in his own line, namely the authors of the Nirukta and of the Prâtiśâkhyas, but from the close of the Vedic period the position of that grammarian has been quite unique. No Academy ever claimed such absolute authority as he possessed. Whatever in the later so-called classical literature contravenes a rule of Pâṇini is ipso facto wrong, and not even the greatest poets, such as Kâlidâsa, would venture to put their judgment against the ipse dixit of their inspired grammarian. Therefore, even if we, from our point of view, should be able to show that many of Pâṇini's rules and roots are fanciful and more than fanciful, the fact remains that these rules determined the whole of what is called Sanskrit literature, with the sole exception of certain portions of the Mahâbhârata and Râmâyana, while there is not a root in his Dhâtupâṭha which a Sanskrit author, even at the present day, would not consider himself perfectly justified in employing.

A work, therefore, such as Pâṇini's collection of roots is of the highest value to the student of the history of Sanskrit. It has stood alone, unquestioned and unrivalled for thousands of years, and it is in our days only that the students of other languages have been able to produce anything like it, perhaps, I ought to add, something better than it. We must bear in mind also that even what to us may appear purely theoretical and fanciful in Pâṇini's grammar is the theory and fancy of an age so remote that its very theories and fancies may become more important than the facts of later ages.

But however stupendous that monument of Indian ingenuity and industry appears, we must not be blind to its defects, though these defects may be inherent in the nature of the work. What it proposes to do is to give us, as the result of a careful grammatical analysis, those elements of language which cannot be further analyzed, and which in Sanskrit are called dhâtu, a feeder or a root. But the discovery of these roots is beset with great difficulties. Roots are liable to phonetic changes, and in the process of composition and decomposition they are sometimes completely lost. It requires a perfect knowledge of the history and the phonetic laws of a language before we can, for instance, trace the Bohemian dci, daughter, to the root DUH, to milk, or aetas, age, to the root I, to go, or the French âge to the Latin aetaticum. It could hardly be expected therefore that Pâṇini and his predecessors should always have been successful in discovering the true roots of Sanskrit words, or that they should have resisted the temptation of admitting new and fanciful roots, whenever it seemed difficult to trace certain words

back to the recognized feeders of the language. Hence that large number of what we call unnecessary roots, that is to say roots imagined for the derivation of words which may be quite as well derived from other roots, or which admit of no satisfactory derivation whatever. For instance, a root NAT, to dance, is put down in the Dhâtupâtha in order to account for natati, he dances, nâtaka, a play, though this is but a regular Prâkritic modification of the older root NÆRT,[1] to dance. Again, to account for such a word as badarâ or badarî, the cotton-tree, a root BAD is admitted in the sense of being strong. We must remember that Hindu grammarians were at perfect liberty to admit as many roots as they pleased, for to them these roots were not, what they are to us, historical facts, but simply the result of phonetic analysis, the remainder of a process of subtraction which removes from words all that can be accounted for as formal, whether as suffix, prefix, or infix, or as the result of the phonetic strengthening and weakening to which the material elements of a language are liable, when passing through the stages of growth and decay.

An insufficient knowledge, however, of the phonetic laws of Sanskrit, though it may account for some of the unnecessary roots in Pânini's Dhâtupâtha, cannot account for all. Westergaard, to whom we owe the first critical edition of the Dhâtupâtha in his "Radices Linguae Sanscritae," published in 1842, a work that will always rank among the masterworks of Sanskrit scholarship, hesitated before ex-

[1] In transliterating roots I use Æ (for *ri*) when ar may be shortened to *ri*; but I use Æ, where Sanskrit grammarians write *rî*, namely when ar varies with ir, and sometimes also with ur. Hence HÆ, to take, but GÆ, to swallow, and PÆ, to fill.

pressing a decided opinion on the character of what I call unnecessary roots. With the caution and modesty characteristic of the true scholar he advised his fellow-laborers to continue their researches, and to wait for new discoveries in Sanskrit literature before asserting the purely fanciful character of these unnecessary roots. Mira assertio, he says, quum tam paululum literae Indicae notae sint. Puto contra quemque sibi persuasum habere posse eas radices, de quibus omnes grammatici consentiant, quum literae Indicae melius cognitae fuerint, omnes exemplis inde sumptis probatas repertum iri!

Circumstances, however, have changed, and our knowledge of the ancient literature of India, particularly the Vedic, has grown so much that we can hardly continue to hope for any considerable additions. We must therefore try to account for Pâṇini's unnecessary roots in a different way. Benfey suggested that they might have been taken from dialects spoken in India at the time when these roots were collected, or even from the languages of neighboring tribes. This is certainly an ingenious conjecture, and I shall try to show that it can be supported by the opinions of native scholars.

The spoken language, Bhâshâ, at the time of Pâṇini.

What we know of literary Sanskrit can never be supposed to have represented the living speech of the whole of India. On the contrary, it seems to represent a very small segment only, the language of the Brâhmans, the language of religion, law, and literature, and no more. This is admitted by Patañgali, the author of the great commentary on Pâṇini's gram-

mar, who when the question is asked who are the authorities to settle what is right and what is wrong in Sanskrit grammar, replied: the "Śishṭas," i. e. the educated people, but not the Śishṭas of the whole of India, but those of Âryâvarta only, that is the country east of Âdarśa, west of Kâlakavana, south of Himavat, and north of Pâriyâtra.[1]

This shows that Patañgali, and, as we shall see, Kâtyâyana also, were fully aware of the fact that many local varieties of Sanskrit were spoken over the vast extent of India.

The question is, what was the classical Sanskrit on which Pâṇini founded his grammar? It was not the Veda, for he has to give special rules for that. Nor was it the language which we find in any of the literary works accessible to us, for all of them, with the exception of mere metaphrases of Vedic texts and the two great epic poems, are founded on his grammar, not his grammar on them. Pâṇini constantly refers to the Bhâshâ, the spoken language. But that Bhâshâ from which he takes his rules and which he tries to bind down by his rules, had changed so much, even at the time when his earliest commentator, Kâtyâyana, wrote, that not only words[2] but even grammatical forms had gone out of fashion in the meantime. Kâtyâyana,[3] it is true, speaks in general terms only of the fact that some words enjoined by Pâṇini are no longer usual, and that they may belong to a different country. But Patañgali enters into details. He points out that forms like the 2 p. pl. of the reduplicated perfect, ûshа, you

[1] Pâṇini, ed. Kielhorn, vi, 3, 109; *Vedic Hymns*, vol. i. p. 59.
[2] See Bhandarkar, *Wilson Lectures*, p. 28.
[3] Pâṇini, ed. Kielhorn, vol. i. p. 9.

shone, tera, you crossed, *k*akra, you made, pe*k*a, you cooked, which were taught by Pâ*n*ini and occur in the Veda (such as ûshá in Rv. iv, 51, 4; *k*akra in Rv. iv, 36, 4) had become obsolete, and had been replaced by such expressions as yûyam ûshitavanta*h*, yûya*m* tîrnâ*h*, yûya*m* kritavanta*h*, yûyam pakvavanta*h*.

More important, however, and in some respects even more confirmatory of Benfey's opinion, are Pata*ñg*ali's remarks on Kâtyâyana's Vârttika, which states plainly that some of the roots and words, sanctioned by Pâ*n*ini, may have belonged to various localities in India. In this passage of the Mahâbhâshya, which I discussed many years ago (1852),[1] we read (Vârttika, 5), "They were all used in another place." Pata*ñg*ali adds: "And if you say that they are not found, then let an effort be made to find them, for the sphere in which a word is used is wide. The earth has seven islands, there are three worlds, four Vedas with their supplements and Upanishads, divided into many texts. There are a hundred branches of the Adhvaryus, the Sâma-veda has one thousand modifications, the Bahvri*k*ya has twenty-one, the Âtharva*n*a-veda has nine divisions. There are, besides, the Vâkovâkya (dialogues), the Itihâsa (legends), the Purâ*n*a (old traditions), and the Vaidyaka (medicine). So wide is the sphere in which a word may be used. Without having explored the whole sphere in which a word may be used, it would therefore be mere rashness to say that certain words are not used."

After this follows another important passage, important because it treats of a subject which is treated

[1] *Zeitschrift der D. M.* G. vii. 373.

in a similar manner in the Nirukta also, a work supposed to be anterior to Pâṇini. There, in the Nirukta ii, 2, we read: "Vedic nouns (*krit*) are employed which are derived from ordinary roots, such as damûnâḥ and kshetrasâdhâḥ, and likewise ordinary nouns are employed which are derived from Vedic roots such as ushṇa and ghṛita." This means that dâmyati, from which damûnâḥ is formed, is not found in the Veda,[1] though it is common in ordinary Sanskrit. The same applies to sâdhyati, from which kshetrasâdhâḥ is formed. On the other hand, the root of ushṇa hot, exists in the Vedic language only, viz. USH (first conj.), to burn; likewise that of ghṛita also, which is GHAR (third conj.).

This shows that the author of the Nirukta was aware that certain verbal roots were used in the Veda which were not used in post-Vedic Sanskrit, and that other verbal roots were used in post-Vedic Sanskrit which were not used in the Veda. It shows, in fact, that already at the time of Yâska Vedic Sanskrit had been replaced by another kind of Sanskrit.

We now come to another remark of the same author which proves that he knew not only of these chronological, but likewise of certain local or dialectic differences in the language as spoken at his time. For he goes on to say:

"Among some people the verbal roots only are used, among others their derivatives only. For instance, the verbal root savati, meaning to go, occurs among the Kambogas only, while they use its deriv-

[1] It occurs once in a very artificial passage of the Bṛihad-âr. Up. v, 2, 1; S. B. E. vol. xv. p. 189.

ative *savas* (corpse) among the Âryas. The verbal root dâti (to cut) occurs among the Prâ*k*yas (Eastern people), its derivative dâtra (sickle) among the Udî*k*yas (Northern people)."

Yâska, therefore, who is anterior to Pâ*n*ini, was aware of the existence of provincial words, and at a later time Pata*ñg*ali fully endorsed his remarks. After the passage translated above, Pata*ñg*ali, continuing almost in the very words of Yâska, says: "The verbal root *savati*, to go, is employed among the Kambo*g*as only, the Âryas employ it in the derivative form *savas* (corpse.) The verbal root hammati is employed among the Surâsh*t*ras, ra*m*hati among the Prâ*k*ya-madhyamas, while the Âryas use only gami, in the sense of to go. Dâti, to cut, occurs among the Prâ*k*yas, dâtra, the sickle, among the Udî*k*yas."

I have quoted these remarks of Yâska, Kâtyâyana, and Pata*ñg*ali because they seem to me to confirm, what would otherwise be a mere conjecture, namely Benfey's view that the language spoken at the time when Pâ*n*ini composed his grammar was much richer, much more diversified in different parts of India than we imagine. Pâ*n*ini himself calls that language Bhâshâ, and it is difficult to understand how some scholars can deny the historical character of that language, when we see how Pâ*n*ini throughout his grammar takes its existence for granted, and carefully distinguishes it from the *Kh*andas, Nigama, Mantra, and Brâhma*n*a, that is the Vedic literature.

If therefore there are roots in Pâ*n*ini's Dhâtupâ*th*a, which cannot be authenticated in the Sanskrit literature known to us, Benfey's opinion that they may have been taken from the language, as spoken in Pa*n*-

ini's time in different parts of India, seems perfectly legitimate, and ought not to be summarily rejected, although it is right to look for other explanations also.

Vulgar dialects at the time of Kâtyâyana.

We must take care not to transfer what Kâtyâyana, still less what Patañgali tells us, to the time of Pânini; but, after making that reservation, we may add that in Kâtyâyana's time vulgar dialects must have existed, which, though they had not yet suffered the phonetic havoc which characterizes Prâkrit,[1] had, according to Patañgali's quotations, come very near to the standard of Pâli.

Patañgali, in discussing the merits and demerits of the study of grammar, has to meet an objection that, in learning the right word, we cannot help learning at the same time a number of vulgar words (apabhramsas), such as gâvî, gonî, gotâ, gopotalikâ, which are all dialectic varieties of the classical word gauh, cow.

In another Vârttika (i, 3, 1, 12) Kâtyâyana adds that it was necessary to give a complete list of all Sanskrit roots in order thereby to exclude such verbs as ânapayati, etc. Patañgali adds vattati and vaddhati. These three words, like gâvî and gonî, are not so much Prâkrit as Pâli, viz. ânâpeti, to command, vattati, to be, vaddhati, to grow. And when he adds that in ordinary parlance kasi is used for krishi, disi for drisi, these are again Pâli words, rather than Prâkrit, for in Prâkrit krishi would be kisi,[2] and drisi, disi.

[1] Kielhorn in the *Z. D. M. G.* xxxix. p. 327 calls these words Prâkrit, but to avoid misunderstanding, it will be well to distinguish between Pâli and the other Prâkrit dialects, properly so called, though, no doubt, the name prâkrita may be applied to both. Supati, too, which he quotes from Pân. iii. 1, 91, 4, is Pâli rather than Prâkrit, where svapna has dwindled down to sivino (Var. 13, 63). See Jacobi in *K. Z.* xxv. 292, 603; Bhandarkar, *Wilson Lectures*, p. 89.

[2] Vararuchi, ed. Cowell, i. 28.

I have referred to these passages in order to claim an unprejudiced consideration for Pâṇini's list of roots. I do in no wise commit myself to a recognition of every root which Pâṇini has admitted, but I do not think we have any right to exclude as purely fictitious every root of which as yet we cannot prove from literary documents that it was used either in nominal or verbal derivatives. The chief literary documents which we can consult, excluding those which are completely under the sway of Pâṇini, are the Brâhmaṇas, Âraṇyakas, Upanishads, Sûtras, possibly the Epic Poems, and these require a much more careful examination than they have hitherto received. I go even further, and, considering the age of Pâli and of the Buddhist Sanskrit, I should look in these two branches of Indian literature for traces of roots, collected by Pâṇini from the so-called bhâshâ, with which they were contemporaneous. That the language of the Buddhist Sanskrit Sûtras is in some cases not very far removed from that of the Brâhmaṇas has been pointed out by Professor Kern in his Introduction to the Saddharma-puṇḍarîka ("Sacred Books of the East," vol. xxi. p. xvii.). He there mentions the Buddhist Sanskrit term sarvâvat (Pâli sabbâvâ), which in classical Sanskrit has hitherto been met with in the Śatapatha-brâhmaṇa only. A second instance, viz. ekoti, which occurs once in the Śatapatha-brâhmaṇa (xii, 2, 2, 4) in the sense of "having one and the same course" and which Kern supposes to be the original form of the Buddhist Sanskrit ekoti in ekoti-bhâva (Pâli ekodi-bhâva), seems to me more doubtful, particularly if the true reading in the Lalita-vistara is ekoṭi-bhâva. In this case it is not impossible that the author of the

*Ś*atapatha-brâhma*n*a has what is called sanskritized a popular word, ekoti, which meant the same as ekâgra, by explaining it through eka-ûti, while the Buddhist author preserved the word as it was used in the bhâshâ, and the Pâli writer took it in another dialectic form as ekodi.[1]

Professor Kern, who considers the root I*Ñ*G as a prâkritism of IṄG, shows that it occurs both in the Buddhist literature (Sanskrit, Gâthâ, and Pâli) and in the B*ri*had-âra*n*yaka, vi, 4, 23.

The same applies to the root MI*Ñ*G which was collected by Pâ*n*ini in his Dhâtupâ*th*a. It is easy to say that Pâ*n*ini invented it. But why should he have done so? I am not aware of any word which he could have derived from it. As to its meaning, I doubt whether Pâ*n*ini took it in the sense either of speaking (bhâshâyâm) or of shining (bhâsâyâm), which our dictionaries attribute to it. Pâ*n*ini gives in his Dhâtupa*th*a, xxxiii, 79–109, a string of roots which he defines as bhâshârthâ*h*. Now these roots cannot possibly have all the same meaning, that of speaking or shining, and, though the compound is unusual, Westergaard was right, I think, in supposing that bhâshârthâ*h* was here intended for "they have those various meanings which are known in the Bhâshâ." And of that Bhâshâ we find traces both in Pâli and in the Buddhist Sanskrit. In Pâli sam-mi*ñ*geti means to bend back, and I do not see how we can identify this, even diffidently, with sam*riñg* (Childers) or samv*riñg* (Kern[2]). In Buddhist Sanskrit we have un-mi*ñg*, to bend

[1] See *Academy*, March 27, 1866, Dr. Morris on Ekodi-bhâva; and April 3. For similar mistakes in sanskritizing vulgar, apabhra*m*sa, and Paisâkî words, see Sylvain Lévi, *Journal Asiatique*, 1885, p. 415.

[2] *Buddhismus*, i. p. 145.

forward, unmiñgita, opened. Here, therefore, we have a root which Pânini ascribes to the Bhâshâ, which, as yet, has not been found in Sanskrit, but which exists both in Pâli and in Buddhist Sanskrit.

Another fact which ought to make us pause before rejecting every root that cannot be authenticated in literature, is that now and then we meet with a root in the Dhâtupâtha which has been postulated by comparative philologists on the strength of its derivatives in other Aryan languages, but of which no trace has ever been discovered in Sanskrit itself. Thus dry, drought in English, dryge in A. S., trocken in German, require the admission of a root which, according to Grassmann's rule,[1] would be DRUKH or DRAKH. How shall we account for the presence of such a root, namely DRÂKH, soshane, to be dry, in the Dhâtupâtha, considering that it has never yet been traced anywhere in Sanskrit, either in verbal or nominal derivatives? A secondary form DHRÂKH, with initial and final aspirate, was naturally a great delight to Grassmann, as confirming his theory of the former existence of roots with initial and final aspirates, as required by A. S. dryge; but here we can hardly follow him. The vowel and the final consonant of DHRÂKH leave some difficulty, still the coincidence is too great to be dismissed as purely accidental.

After these preliminary observations we now proceed to an examination of Pânini's collection of roots. And here it gives me much pleasure to acknowledge how much light has been thrown on the true nature of this difficult work by Professor Hjalmar Edgren in his excellent

Examination of Pânini's Roots.

[1] See Kuhn's *Zeitschrift*, xii. p. 81.

paper "On the Verbal Roots of the Sanskrit Language," published in the "Journal of the American Oriental Society" in 1879. Though from what I have said before, it will appear that I cannot agree with all his conclusions, his essay will always mark a very important advance in the true appreciation of Pâṇini's great work. He distinguishes, first of all, between two classes of roots, the authenticated and the unauthenticated. In the first class he comprises all such roots as have actually been met with in personal or impersonal forms, and he brings their number to 992. That number will probably be increased by a few casual discoveries, but I doubt whether it will ever go much beyond 1000. These are the living germs of the Sanskrit language, such as we know it from its literary remains.

From that number, however, Mr. Edgren deducts first of all 112 duplicates, forms such as DAD (2, 16) and DÂY (14, 9)[1] by the side of DÂ; DADH (2, 7) by the side of DHÂ; DUDH by the side of DHÛ; Î (9, 34; 24, 40; 26, 34) and AY (14, 1) by the side of I; VEP by the side of VIP, etc. He also treats nasalized as mere varieties of unnasalized roots, counting BADH and BAnDH, *Ś*UBH and *Ś*UmBH, SA*Ś* and SA*mŚ* as identical roots. So far most scholars would probably agree with him. But when he proposes to treat SKṚ and KṚ, SKHID[2] and KHID, STAN and TAN, SPA*Ś* and PA*Ś* likewise as mere phonetic corruptions, he seems to me to go either too far or not far enough. These roots have no doubt a common origin, but it is by no means clear that the forms without initial S were

[1] Westergaard, p. 6, note.

[2] This is a mistake; see *Atharva-veda*, v, 18, 7.

derived from those with initial S, or vice versâ. They should be treated as parallel roots, particularly as in several instances their meanings also are kept distinct. Thus we find SMÆR and MÆR, SKÆR and KÆR, *SK*AND and *K*AND, *K*AM and *SK*AM,[1] STÎM and TÎM, SPHAR (SPHUR) and PHAR, *SK*UT and *K*(Y)UT, STÂ and TÂ, in stâyú and tâyú, thief; STAN, to thunder, and TAN in Sk. tanyatus, thunder, tonare, Goth. thunjan; STÆRH, to crush, and TÆRH, to crush; STIP and TIP; SNU and NU,[2] Greek *νυ*. All these roots seem to me to have quite as much right to be treated as parallel, though cognate roots, as GRABH, RABH, and LABH; NA*S* and A*S*;[3] NAH and A*m*H (in a*m*has), etc.

After having reduced the number of authenticated roots from 992 to 880, Mr. Edgren next takes away 48 denominative roots, such as A*m*S, AṄK, ARGH, ARTH, etc. This reduction is quite reasonable, provided always that the nouns from which these roots are formed can be traced back to some other authenticated root. Thus DHÛP, to fumigate, can be accounted for as a derivation of DHÛ, to shake, SÛTR, to tie or to declare in the form of a sûtra, of SIV, to sew; but *S*ABD, to sound, and MÛL, with ud, to uproot, are in a different position. They cannot, or, at all events, they have not yet been traced back to any other roots, and have therefore a right to at least a provisional place in the Dhâtupâ*th*a.

Mr. Edgren, after deducting 48 denominatives, and 16 other roots, which can be accounted for as derived

[1] See Benfey, *Kurze Sanskrit-Grammatik*, § 62, note.
[2] See *Vedic Hymns*, i, 166, 10; Fick, *Wörterbuch*, p. 966.
[3] The parallel forms would be a*s*, a*ms*, ana*s*, na*s*.

from others, such as kâṅksh (from KAM or KAN), gâgæ (from GÆR), daridrâ (from DRÂ), etc., arrives at 880 − 64 = 816 as the actual number of authenticated roots which cannot be traced back to any simpler forms.

But even these remaining 816 roots can be still further reduced by showing that several of them are clearly parallel roots, and form what may be called clusters. Thus, as l in Sanskrit is a parallel form of r, in most cases a later modification of it, such roots as RAMB and LAMB both meaning to hang down, RA*m*H, to hasten, and LAṄGH, to leap, may fairly be counted as one, though they vary considerably in their application to special meanings. The same remark applies to certain roots in which r is final, such as DÆR, to burst, DAL, to split; *K*AR, to go, and *K*AL, to move; *G*VAR, to be hot, and *G*VAL, to glow; or where it is medial as in PRU, to move on, and PLU, to float; PRUSH, to sprinkle, and PLUSH, to burn; MÆRKSH and MLAKSH; MRE*T* and MLE*T*; MRE*D* and MLE*D*; KRAND and KLAND. But if Mr. Edgren goes a step further and treats, for instance, lingual *n* and dental n as interchangeable and therefore BHA*N* as a modification of BHAN, I cannot follow him. The lingual *n* has a character of its own in Sanskrit, and I doubt whether it ever takes the place of a dental n without a definite reason. That r and sh produce that change is well known, likewise that in many cases r and sh may disappear, and yet leave behind their effect in the change of dentals into linguals. This may possibly account for KU*T* and KÆnT, TRU*T* and TÆRD, GHA*TT* and GHÆRSH, KRÎ*D* and KURD, though not without leaving several anomalies unex-

plained. But without a cause a dental never becomes a lingual, and therefore BHA*N*, to speak, though it may be a dialectic variety, cannot possibly be treated as a development of BHAN, to sound. If it is to be connected with some other root, I should rather think of BHÂSH, to speak, though I admit that it is as difficult to account for the presence of a final lingual sh in BHÂSH as for that of the final lingual *n* in BHA*N*.

And what applies to BHAN and BHA*N* applies also to such roots as AT and A*T*, to *K*AL and *S*AL, which Mr. Edgren groups together. AT, to go, could not be changed into A*T*, to roam, without some reason, and that reason, namely the former presence of an r or sh, would at once separate the two roots. If A*T* must be accounted for, the sautra root *Ṛ*T, to follow, to pursue, would offer a far better explanation than AT. As to *k* and *s* being interchangeable at the beginning of a word, I know no certain evidence for it, and cannot therefore, for the present at least, accept such a cluster as *K*AL, *K*AR, and *S*AL, to leap.

It might be possible to show that dentals have been corrupted by local pronunciation into linguals, and in that case BHA*N* and A*T* might find parallels in DÎ and *D*Î, KSHVID and KSHVI*D*; but this is a question which would require very careful examination, particularly as regards the age of various roots.

Accepting, however, the general principles followed by Mr. Edgren, we may, under protest, admit his further reduction of 816 to 789 authenticated roots. He is himself fully aware that there may be much difference of opinion on this subject and that we must leave a certain margin to individual opinion. There

would then remain 789 authenticated roots, sufficient to explain the whole wealth of the Sanskrit dictionary.

But though every one of these roots can claim a kind of personal individuality, I pointed out many years ago (Lect. S. L., vol. ii. p. 329 seq.) that some of them can be arranged in families, though I did not commit myself exclusively to any theory in order to explain the exact degrees of relationship which hold the different members of such families of roots more or less closely together.

Variation of Roots.

After carefully weighing the various theories proposed by Pott, Curtius, Fick, and others, I still retain my conviction that none of them suffices by itself to account for all the facts which we have to explain in the roots of Sanskrit. I cannot resist Pott's arguments altogether, and I find that Mr. Edgren also is inclined to look upon such a root as U*GGH*, to leave, to abandon, as a compound of HÂ, to leave, with the preposition u d. Benfey admits VYAY = VI + AY; VYA$\tilde{N}$K = VI + A$\tilde{N}$*K*; VIDH = VI + DHÂ; PYUSH = API + USH, and some more. I should like to add at least BHISHA*G*, to heal, which I derive from SA*G*, to stick on, and b h i for a b h i, in the sense of putting something on a wound or on any aching part of the body; likewise TYA*G*, to leave, to give up, from t i for a t i, and A*G*, to throw, and possibly VYA*G*, to fan, from v i and A*G*; though I should not venture to go so far as some native commentators have done, who derive YA*G*, to sacrifice, from TYA*G*, to give up, i. e. to offer.

I am ready likewise to admit the theory of Benfey, Curtius, and others who recognize in certain final

consonants derivative elements, possibly remnants of roots attached to roots. If we know how often p is used in Sanskrit to form causatives and denominatives, we can hardly doubt that the same element exists in SÆRP, to creep, as compared with SÆR, to go; in KALP, to prepare, as compared with KÆR, to make; in KSHAP (caus.), to destroy, as compared with KSHI, to destroy. In DHÛP (dhûpayati), to fumigate, the p may be called a nominal suffix, because we have dhûpa, smoke, but it must be an old suffix, for we find in Greek θυφ, changed to τυφ, as in τῦφος, smoke, τυφών, whirlwind, τυφλός, blind.

If one remembers how often the root DHÂ, to set, has been used in Greek for the further differentiation of roots, as in ἐσ-θί-ω, to eat, from AD, in ἀμνάθω[1] from ἀμύνω, νεμέθω from νέμω, ἐργάθω from ἔργω, διωκάθω from διώκω, also ἠγερέθονται from ἀγείρομαι, ἐκίαθον for ἔκιον, etc.,[2] and in the Teutonic languages for forming preterites, such as Goth. habaidedum, we did have, we can hardly wonder that the final dh of many a Sanskrit root should have been interpreted in the same way. Why should not YUDH, to fight, be connected with YU, to join; MÆRDH, to destroy,[3] with MÆR, to crush; GÛRDH, to praise, with GUR, to approve; and even SPÆRDH, to struggle, SPÆRH, to strive, with SPÆR, to win? Nay, if there was a root KRU, expressive of the hardness and harshness of raw flesh or blood (in kravis, kravyá, κρέας, cruor), and if from it we have krûra, harsh, crudelis, why not KRUDH, to be harsh or angry?

The final *g* too may seem to be connected with the

[1] See Curtius, *Verbum*, ii. 339.
[2] Roederer, *Griech. Grammatik*, § 82.
[3] M. M., *Lect. S. L.*, vol. ii. p. 360.

root *G*A or *G*AN, to produce, and thus YU*G*, to join, may come from YU, to join; GAR*G*, to roar, from G*Æ*R, to call out; M*ÆRG*, to rub, from M*Æ*R, to grind; RU*G*, to break, from RU, to break; V*ÆRG*, to turn away, from V*Æ*R, to guard; S*ÆRG*, to send forth, from S*Æ*R, to move; SPHUR*G*, to rumble, from SPHUR, to quiver. When we meet thus with a number of roots, having the same or nearly the same meaning, and differing outwardly by one additional letter only, the conviction, no doubt, grows stronger that this letter was really added in order to modify slightly the meaning of the simpler root. If this happened in one or two cases only, other cases would follow by the mere force of habit.

But I feel doubtful nevertheless whether this theory which treats differentiating consonants such as p and *g* and dh in S*Æ*RP, S*ÆRG*, and YUDH as verbal suffixes, possibly as remnants of independent roots, is altogether satisfactory. If there were no other consonants but p, *g*, and dh, or if some other consonants occurred with greater frequency and always with the same modificatory power, I should feel inclined to see in Curtius' theory a solution of all difficulties. There are cases which require consideration. Thus we find a final t in *K*IT by the side of *K*I, in DYUT and DYU, in KÎRT and K*Æ*R. We meet with an additional formative v in INV, *K*ARV, *G*INV, *G*ÛRV, DHANV, DHINV, PINV, which may be connected with the u of the Tan class. But, as the argument now stands, we must in most instances go further back and look for deeper causes to account for the facts which such Sanskrit roots present to us; we must distinguish in fact between successive phonetic change, and contemporary dialectic variety.

I. Successive Phonetic Change.

I reckon as successive phonetic changes those where the transition of one vowel or consonant into another can be justified according to the general rules which govern the changes of letters in the Aryan languages, while I class all other changes as dialectic, using dialectic in a more special sense, for in its usual sense dialectic would, of course, comprehend many of the successive phonetic changes also which I wish to treat separately. This whole chapter of radical pathology has been well treated by Benfey,[1] and after him by Curtius and others.

Vowel Changes.

(a) A and Â: in DAS, to waste, and DÂS, to weary; BAnDH,[2] to bind, and BÂDH, to oppress; RA*ñG*, to be bright, and RÂ*G* (dîptau), to shine; VA*S*, to be eager, VÂ*S*, to bellow; *S*A*m*S, to praise, *S*ÂS, to order; *S*AS and *S*ÂS, to cut. See besides such stems as *S*AM, *ś*âmyati, etc., Pân. vii, 3, 74; and *K*AM, â*k*âmati, etc., Pân. vii, 3, 75–76; KAM, kâmayate, Pân. iii, 1, 30.

Corresponding changes of î and i, û and u, *rî* and *rĭ* may be seen in any Sanskrit grammar. Thus the verbs beginning with PÛ, shorten their vowel in the special tenses (Pân. vii, 3, 80). GUH lengthens its vowel in the same tenses (Pân. vi, 4, 89). DIV forms dîvyati, BHÎ varies with BHĬ (Pân. vi, 4, 115).

Changes peculiar to special tenses may, as we

[1] *Grammatik der Sanskritsprache*, 1852, p. 71; *Kurze Sanskrit-Grammatik*, 1855, p. 26.

[2] If the nasal of a root remains throughout, I write it as a capital letter; if it is liable to be dropped, with a small letter.

know, become general in Sanskrit as well as in Greek. In *τίνω*, *φθίνω*, *φθάνω*, *δύνω*, the n belongs to the special tenses; but in such forms as *ἔκλινα*, *ἔπεφνον*, *γέγονα*, *μέμονα*, the *ν* has gone beyond its original sphere.

(b) Â and Ĭ: in AÑG, to move, IÑG, to move; A*G*, to drive, and ÎG, to drive, also E*G*; Æ, to go, and ÎR, to stir; A*m*S, to share, and Î*S*, to rule, to possess; AS, to throw, ISH, to shoot; possibly A*m*H, to choke, to gasp, and ÎH, to desire;[1] KHÂD, to press, chew, and KHID, to press;[2] TAM, to be weary, TĨM, to be quiet; *S*ÂS, to order, *S*ISH, to teach; SÂDH, SADH, to reach the goal, SIDH, to reach the goal; *S*AM, *S*IM, to labor. There is, besides, the well-known Ablaut of roots in â (*η*, *ᾱ*, *ω*), giving us DHĬ, STHĬ, and DĬ by the side of DHÂ, STHÂ, DÂ. See also MÎ, MĬ, and DÎ, P*â*n. vi, 1, 50.

(c) Â and U: in KAMP, to tremble, KUP,[3] to be angry; BHA*G*, to share, and BHU*G*, to eat and drink, to enjoy; MAD, to gush forth, to rejoice, and MUD, to be glad. This change is different from the very common transition of an initial va into u as in VAKSH, to grow, and UKSH, to grow; VABH, to

[1] The root A*m*H means to throttle, to compress, and intransitively to be compressed or oppressed, as in *ἄχος*, anxiety, *ἄχομαι*, *ἄχνυμαι*, to be anxious. Then to be anxious for a thing, or to be gasping for a thing, would express the idea of desiring, wanting, and lastly to be in need of, to be needy, to beg. Thus *ἀχήν*, needy, and *ἀχηνία*, need, want, would find their explanation at the same time as egere, egenus, indigere. And whether NAH, to bind together, be connected with A*m*H, or whether it be a separate root, it would give a clue to the Sanskrit root NÂDH (and even NÂTH), meaning to beg, literally to be straitened, pinched, or needy.

[2] P*â*ṇini, vi, 1, 52, states that khid takes â in the Veda *k*ikhâda for *k*ikheda.

[3] The change of a into u may be due to a parasitical v after k, t, and p. Thus, besides kamp and kup there may have been kvap, as in kvath, to boil. Tur and tvar may go back to tar, as tvaksh goes back to taksh.

weave, and UmBH, to bind; VAH, to carry, and ÛH, to move; VÆR, to cover, and ÛR-*n*u, to surround. A similar change is very common in roots in which ar changes with ir and ur, and which Sanskrit grammarians generally write with long *rî* such as GAR, GIR, GUR; *G*AR, *G*UR; TAR, TIR, TUR; PAR, PUR. This phonetic process might also explain such varieties as *K*AR-V, to chew, and *K*ÛR-*N*, to pound; BHÆR, to carry, and BHUR, to flicker; also SPHAR and SPHUR, to burst.

(d) A peculiar change of A to E: A*G*, Î*G*, and E*G*, to set in motion: ÆRDH and EDH, to grow; *G*A*M*H and *G*EH, to kick, to struggle, zappeln, probably Old German gangan, to go; BHRA*mS* and BHRESH, to shake;[1] MÆRD and MRE*D*, to gladden; YAS and YESH, to boil; VAN and VEN, to desire; BHRÂ*G* and BHRE*G*, to shine. The change of î to ê should also be included here, as in HÎ*D* and HEL, VISH*T* and VESH*T*, for they seem hardly to be attributable to the ordinary Guna.

(e) Nasalization of radical vowels: in A*S* and A*mS*; AH and A*m*H; MAH and MA*m*H; IDH and InDH; ÆR*G* and Æ*ñG*; BADH and BAnDH; *S*UBH and *S*UmBH; SA*G* and SA*ñG*, and many more. All verbs such as MAnTH, Pân. vi, 4, 24; see also Pân. vi, 4, 25–26; vii, 1, 59–60.

Consonantal and other Changes.

(a) Reduplication with loss of final vowel: DHÂ and DADH; DÂ and DAD; DHÛ and DUDH; HÂ, to leave, and *G*AH.

(b) Final s added (desiderative): A*S* and AKSH;

[1] See Joh. Schmidt, Zwei Arische A-Laute, in *K. Z.* xxv. p. 62; but the change of palatal *s* into s h remains unexplained.

NA*S* and NAKSH; ÎS, to reach, and ÎKSH, to perceive; KÂM and KÂṄKSH; YA*G* and YAKSH; BHÎ and BHÎSH; *S*RU and *S*RUSH; ÎR and ÎRSH; I and ISH and ÎSH; RAH, to free, to keep off, and RAKSH, to strive to keep off, i. e. to save.[1] With change of vowel, BHIKSH, to beg, from BHA*G*, to share, and BHAKSH, to eat; DHIKSH, to light, from DAH, to burn; MOKSH from MU*K*. I doubt, however, whether BHÂ and BHÂS, BHÎ and BHYAS, RÂ and RÂS, G*Æ*R and GRAS, belong to the same category.

(c) Reduplication with contraction: GHAS, to devour, and *G*AKSH, to devour; HAS, to laugh, and *G*AKSH, to laugh; KAS in *K*AKÂS, to shine, and *K*AKSH, to shine, to see; SA*K* and SA*SK*.

(d) Prosthetic i as in IYAKSH, IRA*G*, IRADH, and even INAKSH, by the side of YA*G*, *Æñ G*, RÂDH, and NA*S*; probably due to imperfect reduplication.

(e) Final Â (and Î) with shortening of base: Î and YÂ, to go; U and VÂ, to weave; KÂ*S*, to shine, and K*S*Â, i. e. KHYÂ, to tell;[2] GAL, to drop, and GLÂ, to droop, unless connected with *G*Æ, to decay; GH*Æ*, to drip, GHRÂ, to sniff, *G*AN, can, and *GÑ*Â, to know; *G*AS (upakshaye) and KSHÂ, to fail (kshaye)?; *G*Î and *G*YÂ; T*Æ* and TRÂ; D*Æ*, to tear, and DRÂ, to run; DHAM and DHMÂ; DHÎ and DHYÂ; P*Æ* and PRÂ; PÎ and PYÂ; BHAS and PSÂ, to devour; MAN and MNÂ; MAL and MLÂ; VÎ and VYÂ, to cover; *S*Î, to sink, and *S*YÂ, to settle, to curdle; *S*Û and *S*VÂ, also *S*VI; *SÆ* and *S*RÂ, to boil;

[1] See Curtius, *Grundzüge*, 28: 64.

[2] Rig-veda, Prâtisâkhya, p. 13, note; cf. Zend khç â.

SAN (?) and SNÂ (also SNU, to drop); STÎ and STYÂ, to stiffen; HŬ and HVÂ, to call. The Sanskrit root *KH*Â, to cut, from which *kh*âta, *kh*ita, and *kh*yati, presupposes a root SKÂ, which appears in Lat. de-sci-sco, etc. (Curtius, p. 145). SKÂ, however, points to SAK, and this appears in Lat. sec-are (Ascoli, K. Z. xvi. p. 207).

The same phonetic process is well known in Greek grammar, though restricted to a more definite sphere: e. g. καλ and κλη in κέκλη-κα; βαλ and βλη in βέβλη-κα; δαμ and δμη in δέδμημαι; μεν and μνη in μέμνμαι; στορ and στρω in ἔστρωμαι. From θαν in θανεῖν and θάνατος we have θνητός; from καμ in κάματος, κμητός; from τερ in τέρετρον, τρητός τιτράω, etc.[1]

Possibly the roots DÂ, SÂ, and *S*Â belong to the same class. If, as has been supposed, DÂ, to divide, is connected with AD, then

AD: DÂ, to divide, dâti, dyati, dayate;
AS: SÂ, to throw, sâti, syati (saya);
A*S*: *S*Â, to sharpen, si-sâti, syati (si-saya).

(f) In many cases roots with final Â have secondary forms in Î and Ĭ, becoming ay and ây by Guṇa and Vṛiddhi. It is usual to represent the roots which change Î to ây, as ending in âi or ây, and they are often treated as separate roots by native grammarians. But if we refer, for instance, DHÂ, to suck, as in adhât, dhâsyati, etc., and DHĬ, as in dhâya, dhayati, dhinoti, and dhinvate, to one and the same source, why not PÂ, to drink, as in apât, pâsyati, etc., and PĬ as in pipâya, payate, and pinvati? Only while some of these roots have

[1] This phonetic process has been very fully treated by Benfey, Brugmann, Fick, and others.

developed every one of these varieties, like DHÂ, DHÎ (dhăy), and beside, DHI-nu, DHI-nva, others are not so complete. GÂ, for instance, exists as GÎ, but not as GĬ; *K*Ĭ (*k*ây) exists as *K*Ĭ, but not as *K*Â. I have no doubt, however, that *K*Ĭ, to observe, to be afraid, as in *k*âyati, was originally the same as *K*Ĭ, to gather, *k*inoti, and *K*Ĭ, to observe, *k*ikeshi and *k*ayate.

Without considering for the present these minuter differences, we may classify most of the roots in Â and Î, according as in the past participle they have ĭ or î.

I. With participles in ĭ, *KH*Â, to cut, *kh*ĭta (also *kh*âta); DÂ, to divide, dita; DÂ, to bind, dita; MÂ, to measure and to fix, mita; *S*Â, to sharpen, *s*ita (also *s*âta); SÂ, to bind, *s*ita.

II. With participles in î, GÂ, to sing, gîta; DHÂ, to suck, dhîta; PÂ, to drink, pîta; SPHÂ, to swell, sphîta; *S*RÂ, to boil, *s*rîta (also *s*râta). This root *S*RÂ points back to *SÆ*, to boil. HÂ, to leave, hîna (also hâta).

The same change of final â to î and ĭ accounts also for *G*RÌ and *G*RĬ, to grow old, as derived from *GÆ*, and for GRI, to approach, if derived from *GÆ*, to approach.

(g) Another curious change is that of final û and îv, as in MÛ and MÎV, *G*Û and *G*ÎV, SYÛ and SÎV.

(h) Sometimes final â varies with u, as in D*Æ*, DRÂ and DRU, S*Æ* and SRU, to flow; SNÂ, to bathe, and SNU, to flow; possibly GÂ and GU, to sing; PRÂ and PRU, to fill, to flow; possibly DÂ and DU; see Darmesteter, "De conjugatione verbi Dare," p. 24.

Mr. Edgren connects even YAM and YU, which would be analogous to DRAM and DRU, and KAMP and KUP; but when he goes further and derives these as well as YAT and YU*G* and YUHD from DAM, I doubt whether it is safe to follow him.

II. Dialectic Variety.

Yet all these phonetic modifications or affections, all the changes, in fact, which could safely be included under the comprehensive name of Phonetic Change, will not suffice to explain everything that has to be explained; nay, some even of the Phonetic affections which we have just examined may require a different explanation as being not simply phonetic. We must here, as elsewhere, have recourse to Dialectic Variety, as the second force which, together with Phonetic Change, has helped us to explain most of the riddles in the life of language. We must also be prepared for a certain number of purely accidental coincidences. Thus, because TUD and NUD both mean to push, it does not follow that initial T and N are interchangeable. Nor would TU*G* and TU*K*, both meaning to drive, warrant us in taking *G*, *K*, and D as variants. TRAP means much the same as TRAS, to be frightened, but this would not justify us in treating P as a substitute of S. A*ñG*, again, has much the same meaning as RA*ñG*, to color, but whether R was either added or dropped is a different question.

Whatever view may hereafter be taken of these and similar cases, it is quite clear that for the present they cannot serve as material for phonetic rules. We cannot say that in a root surd and sonant letters may interchange, because there is some similarity between

*S*AD and *S*AT, between KLATH and GRAnTH, between NÂDH and NÂTH. Mr. Edgren suggests indeed that DUL, to raise, might be connected with TUL, to lift, but how, he does not say, nor does Dr. Whitney, who silently adopts this suggestion, improve it by adding "doubtless."

In GÛRD and GÛRDH, d and dh seem to be interchangeable, in RIṄKH and RIṄG, to creep, kh and g; but such isolated cases can never justify the admission of a general phonetic rule. Many similar cases might be mentioned where consonants seem to have been added, or, it may be, dropped, with a certain purpose, but so sporadically as to make any general conclusions quite impossible. We have spoken already of the final as in BHYAS, which has been matched by G*Æ*R and GRAS, BHÂ and BHÂS. We might add STU and STUBH; D*Æ*R and D*ÆRS*, DÂ and DÂ*S*; MLU*K* and MLUP, SA*K* and SAP; *KH*I and *K*HID. Or initially there might seem to be some purpose in SKAmBH and STAmBH, in *S*RAmBH and RAmBH, *SK*UT and *K*YUT; in *SK*AM and *K*AM. But all such combinations are extremely uncertain. Dr. Edgren compares *SK*AM with *S*AM rather than with *K*AM, but phonetically this would be without a single analogy.[1]

Primitive Dialectic Stage.

Let us suppose that people engaged in cracking bones, breaking stones, or felling trees, accompanied these and similar acts by the sounds of KRA, TRA, or PRA, that is by sounds produced by a firm closing and sudden opening of the chief barriers of the human voice, the throat, the teeth, and the lips. At first the

[1] I see that Edgren took it from Boehtlingk and Roth's Dictionary, Whitney, as usual, from Edgren.

variety of these sounds would probably have been far greater, for there is no reason why the inherent vowel should have been a rather than i or u, or why the r should have been pronounced before rather than after the vowel. We might thus have KAR or KRA, TAR or TRA, PAR or PRA; and again KRA, KRI, KRU, KAR, KIR, KUR, etc. The very fact that roots had to be explained as sounds accompanying the acts of many people working in common would explain the original variety of such sounds, a variety due quite as much to the actual variety of individual sounds as to the more or less delicate perception, remembrance, and power of imitation possessed by different members of the same gang. No doubt every one of these sounds was uttered at first by one individual only, for everything in the world is at first done by one individual only; but that individual must be a leader of men, and the true leader of men is he who leads while being led. From the process of leading while being led, two results would naturally follow: If these sounds were to answer their social purpose, that is, if they were to be understood, it was necessary, either that one individual sound should in the end prevail and the rest vanish, or that by a kind of friction and compromise the various sounds which had been started should be merged into one. The result in both cases would be much the same; the fittest sound would survive, the others would slowly vanish, unless they could be made to answer some new and special purpose. By the first process, that of individual selection, we could quite as well as by composition account for roots, such as YUDH, to fight, YU*G*, to join (manum conserere), being adopted,

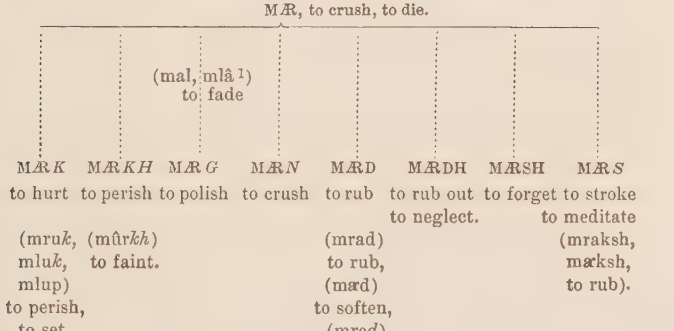
because they happened to be the favorite terms of one great leader of men; by the second process, that of phonetic generalization, the existence of such a root as YU to join, might be explained, as being the most neutralized form of many more individual sounds, such as YUDH, YU*G*, YAU*T*, etc.

All this is, of course, purely hypothetical, and cannot be otherwise, because this first period in the growth of roots belongs to a past which we can reach by hypothesis only. All we can do is to look for possibilities by which the realities of language can be explained, though always keeping our minds open for new explanations, whether adapted to single cases only, or to whole classes of words. What in the interest of true science we have to guard against is that by positive assertion or reiteration, or even by wide popularity, one theory should seem to be more certain than any other; in fact, that we should drift into dogmatism. I do not deny that YUDH and YU*G* may be explained as compounds of the root YU and the two roots DHÂ and *G*AN, but I cannot shut my eyes to the difficulties of admitting such compounds, nor can I see any intelligible explanation of such modificatory consonants as final n, t, v, d, *k*, all of which are likewise admitted by Mr. Edgren as radical suffixes (see also Benfey, "Grammatik der Sanskritsprache," § 144, iv). I therefore keep my eyes open for the other explanation, namely that out of a large number of individual or occasional sounds, YUDH and YU*G* survived, because used by a powerful man or by a powerful clan, while YU survived as the most general sound by which the various acts of joining either in combat or in peaceful work had been expressed. These two hypotheses do not ex-

clude, they rather complete, one another, and by either of them we could understand what we must learn to understand, namely the existence of clusters of roots some of which, both in form and meaning, are coördinate, while others are clearly subordinate.

In my "Lectures on the Science of Language" (vol. ii. p. 347) I tried to show what I mean by a cluster of roots, selecting for that purpose the root MÆR and its relatives. There are two ways of representing the genealogical relationship of this family of roots. We can either look upon the simplest form MÆR as the ancestor of all the rest, or we may consider it as simply one out of many cognate roots, though perhaps as the most typical representative of the whole family. Root Æ.

In the first case our stemma would be something like this:



In the second case we might represent the cluster in the following way:

[1] I distinguish phonetic varieties by small letters.

MÆRK
MÆRS *MÆRKH*
MÆRSH MÆR *MÆRG*
MÆRDH *MÆRN*
MÆRD.

Besides these nine roots which have survived in Sanskrit, there may of course have been many more which became useless after a time and were replaced by others. But taking those which have survived, I can hardly bring myself to believe that they are all later descendants of the one root MÆR. Some of them may be, but others lend themselves far more naturally to the second explanation, namely that they exhibit the working of Dialectic Growth, and represent to us the few remaining trees of a forest which may have been as many years in growing as it was in being cleared and rendered pervious to the rays of rational thought.

The same remark applies to other clusters of roots.

The Sonant Aspirates.

We know how often the aspirated mediae H, BH, DH, GH vary in Sanskrit and other Aryan languages, but it is difficult, and in many cases impossible, to determine whether any one of them was the original from which the others were derived, or whether we have to admit from the beginning a number of independent dialectic varieties. Thus we find radical forms, such as GÂH, GABH, and GADH; NAH, NABH, and NADH; *S*UBH and *S*UDH; GALBH and GÆRDH; GRABH and GRAH; DÆRBH and DÆR*m*H; SAH and SAGH; RUH and RUDH. In some cases the transitions from one into the other aspirate are so common as to fall under grammatical rules, but neither phonetic weakening or strengthening will fully account for them all.

The same mixture of phonetic change and dialectic variety we see in such roots as DHUR, DHÛRV, DHVAR, DHVAL, DHRU, and by their side HUR, HVAR, HVAL, HRU, and even HÛR*KH*.

Initial Modifications.

As to initial modifications, the most important one, that of the adding or dropping of the S, has been treated before (see p. 343). In some cases this S seems clearly to have been present, and then to have been dropped, but in other cases that view is hardly tenable, while dialectic variety would account far better for the facts, such as we find them.

The inital s, however, has produced some other modifications in roots which, though they have been treated by Kuhn and Ascoli, deserve to be considered here, particularly as they seem to me to admit of a simpler explanation than those proposed by my illustrious predecessors.[1]

In many cases a root beginning in the other Aryan languages with sk, appears in Sanskrit with kh. Sanskrit is not fond of initial sk, nor of st and sp. With initial sk the most important roots are SKAmBH, to support, SKAND, to jump, and SKU, to cover, while with the European members of the Aryan family sk is a very favorite initial. We can watch the phonetic process in Sanskrit. We find, first of all, the usual dropping of the initial s, as in KHAL and SKHAL, to stumble, KHAD and SKHAD, to strike, to be firm. Here the aspiration of the k seems clearly due to the permanent influ-

[1] Ascoli appeals for analogies to Prâkrit and Pâli, where initial s is often changed to h and placed after the following explosive or nasal consonant; e. g. asti becomes atthi, asmi (a)mhi. I look upon these Prâkritic instances as parallel illustrations of phonetic processes in Sanskrit, but I shall be able to show that Sanskrit itself supplies all that is necessary to account for the transition of sk to *kkh*.

ence of the preceding s, which has exercised a similar influence in STHÂ for STÂ, stare, in STHAG, to cover, compared with στέγω and tego; in SPHÂ, to swell, compared with σπάω; in SPHUR, to tremble, to sparkle, compared with σπαίρω.

Under certain circumstances, owing possibly to the nature of the following vowel, this kh, originally sk, becomes palatalized. Thus we find *KH*ID, to cut, for skid, Lat. scindo; *KH*AD, to cover, for skad, from which we have also Sk. *kh*adman, fraud; *KH*UR, to scratch, for KHUR, to scratch, from which *kh*urikâ, razor, connected with σκύλλω, Lith. skurà, hide, ξυρόν, razor. Khura also, generally meaning hoof, is quoted in the sense of razor.

But this is not all. There is a further change from sk or skh to ks, for we cannot doubt that kshurikâ, razor, and kshura, ξυρόν, is connected with *kh*urikâ (i. e. skurikâ); and in the same manner, that KSHA*N*, to scathe, to injure, is connected with KHAN, to dig, originally SKAN. Thus we find by the side of SKHAD and KHAD, to strike, a third form KSHAD, meaning to cut, to divide, which may be connected, though, I admit, the connection is doubtful. In kha*n*da, a division, a share, the lingual character may be due to the former presence of sh in ksh, unless, with Fick, we connect it with SKAR and SKARD, to break.

In this way we get the following possible varieties of an original SK, namely SK (K), SKH, KH, *KH*, KSH. All this is intelligible phonetically, and the other Aryan languages offer confirmatory analogies. The pronunciation ks for sk is no more than a phonetic illusion, which appears dialectically in Greek σκίφα, and ξίφα, the steel in a plane; σκίφος and

ξίφος, sword, in O.H.G. wefsa for vespa, and in English to ask, and to ax, and vice versâ, Italian lasco for laxo. Ascoli points out kh as a substitute for sk in Sk. vâ*ñkh*, as compared with O.H.G. wunsc, wish; in Sk. i*kkh*ati, as compared with O.H.G. eiscon, and likewise in so-called inchoative words, as ga*kkh*ati, βάσκει, etc. The transition from sk to *kkh* would pass through skh, *skh* (preserved in the Kâ*th*aka spelling) to *kkh*; or from sk to *sk* (preserved in Mâgadhî), *skh* and *kkh* (see Ascoli, "Vorlesungen," p. 178). The former existence of *skh* seems to be indicated likewise by such derivatives as pra*s*-na from a stem pra*kkh*. If this stem had been pra*kkh*, a derivative formed by na would have been prak-na or prag-na, while the fact that it is pra*s*-na shows the former existence of a penultimate *s*.

What is more difficult to explain is the representation of ks by kt and kr in Greek. There can be little doubt that Greek κταν corresponds to Sk. KSHA*N*, but this represents a more original SKAN and KHAN. Thus *r*iksha, bear, is represented by Latin ur(c)sus, but Greek ἄρκτος; taksha*n* by τέκτων; KSHI, to kill, by κτι. Such a transition, however, of s into t is very difficult phonetically. As to kr representing ks, the change might be more easily accounted for, but the instances themselves are not beyond the reach of doubt; for instance, KSHI, to rule, in uru-kshaya, widely-ruling, Gr. εὐρυκρείων; kshiprá, quick, and κραιπνός; ksha*n*a and κρόνος; kshápas, night, and Lat. crepus-culum.[1] The difficulty of admitting a phonetic correspondence between Sanskrit ks and Greek κτ was felt so much

[1] See Curtius, *Grundzüge*, p. 705.

that some scholars preferred to look upon the Greek κτ as the original, and the Sanskrit ks as the secondary form. But this would cause still greater difficulties. We saw that the Sanskrit ks represents in many cases an earlier sk, and if the sk stood for tk, we should have to admit an initial group, t and k, which is opposed to the phonetic genius of most of the Aryan languages. Even kt, which Greek tolerates, is impossible initially in Sanskrit as well as in Latin. We must therefore retain the phonetic changes in the succession suggested above, sk, skh, kh, *kh*, ksh, and possibly Greek κτ and κρ.

If this phonetic law is once recognized, we are able to classify a number of roots, apparently widely separated from each other: —

(1) KHA*G* is mentioned as a root meaning to shake, to pound; from it kha*g*â, a whisk, and kha*g*ikâ, a spoon (coch-lear), kha*g*a, fight, etc. Here the Teutonic languages give us A.S. sceacan, to shake, to swing; O.N. skaka, to swing, etc. It might be possible also to derive from this root, or the next, the name of the goat, as the jumping animal, Sk. *kh*ă̂ga, goat.

(2) KHA*Ñ*G, to limp, is probably a modification of the preceding root, and appears in O.N. skakkr, skew, wry, and in Greek as σκάζω for skag-yo. If unprotected by s, initial k would follow Grimm's Law, and appear as h in O.H.G. hinchan, to halt.

(3) KHA*K* is given as a root in Sanskrit with the meaning of coming forth, appearing, and has been traced in the O.N. skaga, to jut out, and skagi, a low cape or ness, Vorsprung. Even the O.H.G. gi-scëhan, to happen, in German vorkommen, may spring from the same source, as well as the Old Slav. skakati, to spring, to dance.

(4) KHAD is given as a Sanskrit root meaning to strike, and to be firm, two meanings which seem very distant, but which may be accounted for, if we consider that what is being struck becomes firm.[1] The same root has also the meaning of chewing assigned to it, which is in fact the principal meaning of the Sanskrit root KHÂD. A third root KHID means to squeeze, to depress, and, as a neuter, to be depressed; a fourth KSHAD means to cut, to divide, to eat; a fifth SKHAD, to strike, to be firm, to be depressed.

These five roots, SKHAD, KHAD, KHÂD, KHID, KSHAD, may be traced in the following words: —

(a) Chewing; cêna, from Sabine scesna for scedna; Lith. kándu, to bite; Zend *s*kenda, breach.

(b) Pressing, being depressed: *κήδω*, I torment; *κήδομαι*, I am sorrowful; Lith. skaud, to torment.

(c) Striking, dividing: *σκάζω*, to tear, to open; *σκεδάζω*, *σκεδάννυμι* and *κεδάννυμι*, *σκίδναμαι*, to scatter; scandula, scindula; Goth. skatts,[2] piece of money (cf. *κέρμα* and minutum). It would be difficult to trace to this root words like O. H. G. scadôn, schaden, A. S. sceathan, Goth. gaskathjan. They presuppose a final t, and would have to be treated as derived from kshata, a participle of KSHA*N*, like *s*âtayati from *s*âta, a participle of *S*Â.

(5) *KH*AD, to cover, Zend *sk*ad, to cheat, Sk. *kh*adman, fraud, cas-trum, casa, cassis. On root SKA in *σκιά*, *σκό-τος*, *σκη-νή*, Goth. skadus,

[1] See p. 378.

[2] But see Schrader, *Handelsgeschichte*, p. 116.

shade, σκέπας, etc., see Curtius, p. 168; Ascoli, "Vorlesungen," p. 172.

(6) KHAN, to dig, to destroy, seems a parallel root of KSHA*N*, to hurt, to kill (see also 18, *KHÂ*). The corresponding form in Greek is κταν (also κτα) and κτεν, in κτείνω, κτόνος, where the transition of ks into kt is difficult.[1] Possibly the later form καίνω is in reality more primitive, and the insertion of t should be explained as in πτόλις for πόλις, and in κτέδων, a split, from σκεδ, κεδ. The Greek σκάπτω, to dig, σκαφεύω, to dig, are secondary forms.

(7) SKAND, to jump, up or down, rise or fall, Greek σχάζω, to fall, Lat. scando, descendo. Probably Sk. *kh*andas, metre, belongs to this root.[2] A parallel form may be SKUND, to jump, and KSHUD, to crush, and also to shake, from which to shoot.

(8) KSHAP exists as KSHAP and KSHIP. In Sanskrit KSHAP means to throw; the more common form is KSHIP. In Greek we have σκαπ or σκάπτω, to dig, but that belongs to the cluster SKA, SKAN, and KHAN. We have σκήπτω and σκίμπτω, which mean, however, to rest, the Latin niti, and not to throw, except in such derivatives as σκηπτός, thunderbolt. Σκῆπτρον, staff, sceptre, may have been originally either what was thrown or what we rest on, like Lat. scip-io. The Greek σκώπτω, to scoff, meant originally to throw or to insult. In Sanskrit kshapa*n*yu is insult, and kship is used in the sense of insulting. If so, it would account also for the German Schimpf and Schampf, meaning both joking and scoffing.

[1] Curtius, p. 698.

[2] *Chips*, i. p. 84; *Rig-veda Samhitâ*, p. cii.

(9) The root SKAmBH, to rest, to prop, comes often in its derivatives very near to the root SKAP. Thus scamnum, bench, may be derived from either, though scabellum points to SKAmBH. Another root, STAmBH, to prop, which in Greek appears both as στεμφ and στεμβ, has often been claimed as closely related to SKABH.[1]

(10) Though the origin of Sk. *khâyâ*, shadow, is not clear (see 5, *KH*AD), still after what we have seen of the true nature of an initial *kh* in Sanskrit, its identity with Greek σκιά, shadow, σκότος, dark, cannot be doubted. Others have thought of the root KHYÂ, but this, according to native grammarians, stands for K*S*Â, a secondary form of KA*S*. See also 21, SKU.

(11) SKHAL, to tremble (cf. 17), also KHAL, and possibly connected with them *khala*, fraud, Lat. scelus. Curtius admits a kind of relationship with σφάλλω, Sk. SPHAL, O. H. G. fallan, to fall; Fick compares σκαίρω, to jump, σκιρτάω, etc.

(12) The root KÆ, to do, was originally SKÆ, to cut, to shape, to make. We can trace back to it the Prâkrit kalpanî, scissors, Greek κείρω, to cut, to shear, σκάλλω, to shear, O. H. G. scëran, shears, and scar. The Sk. khara, thorn, and Greek σκόλοψ, thorn, may likewise be referred to this root. The root KÆ (k*rin*âti and k*rin*oti) is also quoted in the sense of hurting and killing.

(13) SKÆP, a derivative of the preceding, to cut; Lat. scalpo and sculpo; Lith. kerpù, to shear. Sharp has been traced to the same cluster, but doubtfully.

(14) SKÆ and KÆ, to pour out, to scatter; κεράννυμι, to mix.

[1] Kuhn in *Kuhn's Zeitschrift*, i. 139; iv. 32.

(15) KHAR*G*, to creak, to scratch, κέρχω, to be or to make dry, hoarse.

(16) *KH*ARD, to vomit, σκορδινᾶσθαι, to gape, to retch; Old Slav. skarędŭ, repulsive.

(17) KURD, to spring (cf. 11, SKHAL), KHO*D*, to limp, κόρδαξ and σκόρδαξ, a dance; M. H. G. scherzen, to jump, Ital. scherzare.

(18) *KH*Â (cf. 6, KHAN), to cut, *kh*avi, skin; Zend skâ, skyaiti, to cut, skata, hollow; σχάω, to slit, see σχάζω; κῆτος, hollow. This *KH*Â, if for SKÂ, may be traced back to a root SAK, to cut, in secare.[1]

(19) *KH*ID, to split, Zend *sk*id, σκίδ-νημι, σχίζω, scindo; Lith. skëda, splinter; cf. 4, KHAD.

(20) KÛ, with â, to see, to consider; kavi, poet; κοϝος, seeing, knowing; cavêre (?); Goth. skavas, seeing, in us-skavas, provident.

(21) SKU, to cover, σκύτος and κύτος, hide; scutum, shield; A. S. scúa, shade, and sky, originally cloud.

(22) *KH*UR, to scratch, also KHUR; σκύλλω, to skin; scortum, hide; Lith. skurà, hide; Sk. *kh*urâ, lime; σκύρος, chipping of stone; Sk. kshura, khura, kshurikâ, razor, ξυρόν.

(23) Sk. kshupa, kshumpa, *kh*upa, shrub, bush, scopae, A. S. sceáf.

There still remain three roots beginning with palatal *sk* or *k*, namely *SK*AND and *K*AND, to be bright, *SK*AM and *K*AM, to sip, to swallow, and *SK*UT and *K*UT, to fall, to drop. The first root shows its *s* in the intensive form *k*ani-*sk*and, and

[1] See before, p. 353; and Ascoli, *Vorlesungen*, p. 173, who compares likewise scio, to know, originally to distinguish, to divide, to decide (Lat. de + caedo).

in compounds such as Hari*ś*kandra, etc. Without the *ś* we find it in *k*andra, bright, moon, Lat. candere, Gr. *ξανθός*.

The root *SK*AM seems to exist in Sanskrit only, under its double form of *SK*AM and *K*AM.

The third root is given by Sanskrit grammarians as *SK*UT and *SK*YUT, and *K*UT and *K*YUT. It must not be confounded with *K*YU, to move, which in Sanskrit shows no initial *s*, though the parallel, but unauthenticated root, KHYU, might be used to prove its former existence.

Residuum of real Roots.

We thus see that although it is possible to gather a number of roots, given by native grammarians as independent roots, into large clusters, their actual relationship often remains a problem difficult to solve. Is *KH*Â, to cut, to be derived from a root SAK, to cut, which does not exist in Sanskrit at all, but which may have existed in the Ursprache, and which by processes, well supported by analogy, may have been changed from SAK to SKÂ, from SKÂ to KHÂ (khâta) and *KH*Â (*kh*âta)? Or is it better to accept *KH*Â (*kh*i), in Sanskrit at least, as an independent root? It is very difficult, as I said before, to discover in every case sure criteria for dividing simultaneous varieties from successive modifications, and I feel very doubtful, therefore, whether, for the present at least, we should go so far as Mr. Edgren. I can follow him down to 789 roots, or, deducting the roots *S*AD, BHA*N*, and A*T*, to 792 roots. Few scholars would hesitate at present to treat such roots as PÂ, to drink, and PÎ, to swell, SÂDH, to accomplish, SIDH, to be accomplished, RA*ñG*, to color, and RÂ*G*, to shine, and again all roots like MAN and MNÂ as primary and secondary,

MNÂ being actually derived from MAN, RÂG from RAñG or RAG, PĬ from PÂ. But I decidedly prefer to treat other roots, which Mr. Edgren considers as derivative, as parallel varieties, particularly as most of those which he calls derivative occur simultaneously in the earliest literary documents, while many of them can be proved to have existed even before the Aryan separation.

In several cases I doubt altogether the relationship of the roots which he classes together. I do not see how NARD, to roar, could have become NAD, to sound, though NAD may be related to NAND, to rejoice. Still less can I follow him when he tries to connect YUG, YUDH, and YU with YAM and DAM, though I know quite well what analogies he has in his mind. Mr. Edgren is himself fully aware of the uncertainty of many of his conclusions, and, like a true scholar, he warns his readers against trusting too implicitly in the reduction of the Sanskrit roots which he has carried out. From the 789 (792) roots which remained at the end of his last census, he deducts 156, which I should generally allow to be cognate, but not necessarily derivative. This leaves 633 roots. From these he deducts a new list of what he calls "varied developments of some lost elementary roots," leaving 587 roots. With regard to this last list, the only question is whether we must really admit with Mr. Edgren the former existence of such primitive elementary roots, or whether it is not far preferable to treat roots like KAM and KAN, TUG and TUD, as the natural effects of what I call Dialectic Growth in roots. I do not see how it follows that, because SUK, to shine, SUBH, to shine, and SUDH, to purify, leave the impression of being cog-

nate roots, there must have been an original *SU*, from which they were all derived. Nor can I bring myself to see more than accident in the fact that a number of roots ending in m, such as AM, KRAM, DRAM, BHRAM, express motion, while others ending in n express sound, e. g. TAN, DHVAN, BHAN, RAN, SVAN. It seems on the contrary as if final m and n were often interchangeable in roots. Thus we find KAM, KAN, and KÂ, to love, to rejoice; RAM and RA*N*, to rejoice; GAM, GÂ, and Greek BAN, Lat, v e n - i o, to go.[1] The character of a root, if we may say so, would seem to be embodied in the initial rather than in the final part, though even here most of our observations are very questionable. It has been remarked, for instance, that roots beginning with k u are mostly expressive of sound. So they are. We find in the Dhâtupâ*th*a KU, KU*K*, KU*G*, KU*N*, KUD, KUTS, KUP, KU*S*, to say nothing of KSHU, KRU*S*, KNU, KVA*N*, etc., all expressive of some kind of sound. But there are other roots beginning with k u which convey nothing, as far as we can judge, connected with sound, so that this argument also would not carry us very far.[2] I quite understand Mr. Edgren when he says that a more vigorous dealing with this subject would considerably reduce the number of 587 roots, but I am afraid that the vigor which we should have to employ for that purpose might lead us to where it has led other scholars who, like Dr. Murray, imagined that they could derive our language from nine roots, AG, BAG, CWAG, DWAG, LAG, MAG, NAG, RAG, SWAG, or who, like Dr. Schmidt, traced the whole Greek dictionary

[1] Ascoli, *Due recenti Lettere glottologiche*, 1886, p. 62.

[2] See before, p. 306.

back to the root E, and the whole Latin dictionary back to the root HI.[1]

With all these reservations, however, I do not in the least intend to detract from the high merit of the work which Mr. Edgren has carried out, and which seems to me to mark a decided advance beyond what had been achieved in the same direction by such eminent scholars as Benfey, Pott, and Curtius. Whether we shall have to admit in the end 1000 authenticated roots, or 992, or 880, or 816, or 633, or 587, the marvellous fact remains that out of this small number of roots the whole wealth of the Sanskrit language has been elaborated, and that the problem of the origin of the Sanskrit language — and to a certain degree of all the Aryan languages — is solved, if we can give an intelligible account of the origin of this small number of predicative roots, together with the few demonstrative or pronominal elements which were employed for the derivation of verbal and nominal forms. I call this a marvellous fact, because it would have sounded incredible to men such as Plato and Aristotle, nay, even to Descartes and Spinoza, and it seems to me to mark a new dawn not only in the Science of Language, but likewise in the Science of Thought.

Unauthenticated Roots.

We have still to consider a large class of roots contained in Pâ*ṇ*ini's Dhâtupâ*ṭh*a, which have not hitherto been authenticated at all. Their number amounts to about 1100, and would be considerably higher, if every root to which two incompatible meanings are assigned were treated as two. These roots have been carefully examined by Mr. Edgren, and the conclusions at which he has

[1] M. M., *Lect. S. L.*, vol. i. p. 441.

arrived seem to me in most cases very sound. He points out that whereas with few exceptions all authenticated roots are surrounded by a large family of words, few of these unauthenticated roots — only about 150 out of about 1000 — have proved fertile at all, and even in their case their offspring seems often spurious. He likewise remarks that very few of them occur with prepositions in Sanskrit, and that still fewer can be traced in any of the other Aryan languages.[1] He shows that there is a certain method in multiplying roots, and he hints that after a time grammarians may have taken a certain pride in adding new roots to those already collected by others. Still, admitting all this, this large number of roots not, or not yet, authenticated is startling, and it is but natural that scholars should be unwilling to brand them all as mere figments. Even if many of them should be mere grammatical figments, they are still interesting as showing that Pâṇini and his predecessors believed rather in the coördinate than in the subordinate character of roots, and were therefore ready to admit a vast dialectic growth of roots rather than the creation of one typical root, changed afterwards by modificatory suffixes. Nothing is more dangerous to a scholar than to find his own theories unexpectedly confirmed. Having myself postulated the existence of every possible variety of roots, I confess that finding in Pâṇini such strings of roots as TUP, TUMP, TUMB, TUBH, TUMPH, TURV, TRUP, or ARB, KARB, KHARB, GARBH, GHARB, ṈARB, TARB, NARB, PARB, BARB, MARB,

[1] Fick in his *Wörterbuch der Indo-germanischen Sprachen* traces 450 of the authenticated Sanskrit roots in other Aryan languages, but only 80 of the unauthenticated, and many of these very doubtfully.

LARB, *S*ARB, SHARB, SARB, I kept up a lingering belief that after all these roots might have been deduced from real words, lost to us, because not employed in literature, but familiar to Pâ*n*ini and his predecessors from their intercourse with people belonging to different parts of India, to different villages, different schools, different castes, trades, and families. But after reading Mr. Edgren's remarks even that lingering belief has been much shaken, and I cannot resist the conviction that most of these unauthenticated roots are the result of a grammatical theory rather than of a careful analysis of actual words.

These changes of form possess their own peculiar interest, and they must often be settled first, before we can attempt to disentangle the changes of meaning with any degree of certainty. Thus, if we want to know whether the original meaning of Î*D* was to beg or to honor, we must try to find out what phonetic changes are presupposed by the form Î*D*. The lingual *d* postulates the previous existence of an r, the long *î* points back, as in Î*G* and AG, Î*S* and A*S*, to a more primitive a. Thus we arrive at ARD as an earlier form of Î*D*, and this ARD means to hurt, to torment, fatigare precibus, i. e. to importune, thus showing that Î*D* must have meant originally to implore, before it came to mean to honor.[1] Whether we may go a step further and derive *Æ*RD from *Æ*R, to move, to stir, is a question which I should not ven-

[1] Boehtlingk (*Z. D. M. G.* xxxix. p. 533) connects î*d* with ish, to wish, and compares p*î*d and pish, which Benfey derives from pi and sad; *Grammatik der Sanskritspr.* § 142, iii. If we identify *d* with l, we might compare mish and mîl, but otherwise I see no analogy for a transition of sh into *d*. Mîl points to mith, p*î*d to pi*n*d and pibd, all very obscure formations.

ture to decide, at all events not in the sense that ṚD was derived from Ṛ by means of a suffix D.

So again, if we wish to know how such a concept as lord and master, or to be a lord and master, to rule and govern, was elaborated, we should grope very much in the dark, unless we knew that such a root as ÎS, to rule (Goth. aigan, to possess, Anglo-Saxon ágan, to owe), and the substantive îsa, lord, may be traced back to the root AS, which means to reach, to obtain. This root had probably at first a less general meaning, and we find it used in Sanskrit as as-nâ-ti, he obtains his portion, he eats, and as-no-ti, he obtains a share, and with nasalization as AmS, from which amsa, a part. From this root AS we obtain not only ÎS, to rule, but likewise a desiderative root AKSH, to reach, perhaps originally to wish or to strive to reach, and by again changing a to î, ÎKSH, literally to reach after, then to see or to perceive. In akshi, the eye, the same meaning has been anticipated, on the supposition that akshi means eye, because it meant originally the searcher or groper, just as netram means eye, because originally it meant the leader, from NÎ, to lead. It is most tempting, no doubt, to go a step further, and with Mr. Edgren to take NAS, to reach, as a derivative form of AS. Nor do I deny that it may be possible to explain the initial n of NAS and NAH as the effect of nasalization. If AmS was under certain circumstances pronounced ANAS, that form may have become permanent (see p. 343, note 3). Frequent reduplicated forms, too, such as ânase, etc., may have led to the formation of a new root NAS. But until we can give a really satisfactory account of the accretion or the dropping of the initial n, we

ought to wait, and be satisfied to treat NA*S* as an independent root which survived in the struggle for existence by the same inherent power which gave permanence to A*S* and A*mS*.

Meaning of Roots.

With regard to the meaning of roots Pâ*n*ini is a useful, though not always a safe guide. His explanations of the meaning of every root have perhaps been somewhat unfairly criticised by those who expected more from him than the old Indian grammarian ever intended to give. His object seems to have been no more than to give a general and approximate definition of every root, without attempting an exhaustive account of all its meanings, still less a psychological analysis of the development of these meanings from the special to the general, or from the general to the special, from the concrete to the abstract and again from the abstract to the concrete. In several cases when he confines himself to saying that a certain root is used in the sense of gati, going, and hi*m*sâ, killing, we should, I believe, be not very far wrong if we took going in the general sense of intransitive, killing in the sense of transitive action, Pâ*n*ini being satisfied with this general indication, and leaving the more special application of a root to be elaborated by others. Sometimes he finds it impossible to define the signification of a root by anything but the root itself, or by the negation of its opposite meaning. Thus we find that Pâ*n*ini explains MÂ simply by mâne, measuring, VAS by nivâse, dwelling, DVISH by aprîtau, not loving. Sometimes it seems as if the meaning had only been added in order to distinguish two roots identical in sound, but differing in meaning. Certainly no attempt is ever made by Pâ*n*ini to trace,

what to us is of the greatest interest, namely the gradual development in the meaning of roots. This we have to discover for ourselves, and though much has been done in this respect by the makers of dictionaries, very much remains to be done.

Generalization and Specialization of Roots.

The impression left on our minds by a study of Pâṇini's collection of roots and of the meanings which he assigns to them would certainly lead us to suppose that most roots had in the beginning a general meaning. Roots meaning to go, to move, to hurt, to kill, to sound, etc., form a large majority, and this very fact has often been dwelt on as showing the uselessness of Pâṇini's definitions. Still, the same idea has very much influenced the researches of the students of the science of language, nor can it be denied that during the periods which we have the best opportunity of watching in the growth of language the tendency in the development of the meaning of roots is certainly from the general to the special.

Influence of Prepositions.

That development is very much influenced by the use of prepositions, an influence so great that in several, nay in many cases, the same root can be made to convey not only very varying, but sometimes diametrically opposite meanings. This fact is hardly ever taken into consideration by Pâṇini. He gives to KHAN, for instance, the meaning of tearing or breaking open (avadâraṇa). We know that in real language this breaking open is always confined to the breaking of the soil, and that KHAN means, to all intents and purposes, to dig. The same root, however, with the preposition ni, assumes the meaning of digging in or

making firm.[1] At a time when houses consisted of a few piles driven into the soil, covered with reeds and leaves, what was dug in naturally assumed the meaning of firm. In Zend the name for house was kata, i. e. dug, possibly hole, cave, and this name still lives in the Persian kadah, house.[2] With the preposition pra, however, the root KHAN means to undermine, with ud, to destroy. Thus GRAnTH means to tie together, but with ud, to untie. AÑK with apa means to drive away, with prati to honor. NÎ, to lead, with vi, means to train, to educate, with pra to desire, with pari to marry. NAM with ud means to raise, with ni, to bow down. MUK is to let loose, but with prati, to fasten.

Now it may happen that one of the meanings depending originally on a certain preposition, came to prevail to such an extent that the root, even without the preposition, retained the same meaning. Thus NAM means originally to bend, but with pra it comes to mean to bend forward, to pay respect, to worship. In the end, however, the simple NAM may be used to convey the same meaning of worshipping, and the substantive namas never means bending, but always veneration.

Special Meaning original.

But although during the time when the growth of language becomes historical and most accessible therefore to our observation the tendency certainly is from the general to the special, I cannot resist the conviction that before that time there was a prehistoric period during which lan-

[1] The two meanings of striking and being firm are combined also in KHAD; see p. 365.

[2] Schrader, *Sprachvergleichung*, p. 405. The name for bread also, as being baked between layers of hot ashes, is derived from the same root, the Persian nân, Beluchi naghan; Schrader, l. c. p. 373.

guage followed an opposite direction. During that period roots, beginning with special meanings, became more and more generalized, and it was only after reaching that stage that they branched off again into special channels.

If we take, for instance, such roots as now convey the most general meanings, such as being and doing, we can in most cases discover, or, at least, guess their former more special purports. AS, to be, meant to breathe, BHÛ, to be, to become, meant to grow, VAS, in I was, meant to dwell, VÆRT, in German werden, meant to turn, KHA*K*, in German geschehen, vorkommen, meant to jut out.[1]

To do meant originally to set, like Sk. DHÂ. To work may have been originally the Sk. VÆR*G*, to twist, to strip. The Sanskrit TAKSH and TVAKSH, to make, to prepare, was originally conceived as cutting and shaping wood. From it we have the substantive tvákshas, vigor, and the adjective tvákshîyas, very strong. The Sanskrit tákshan, carpenter, is the Greek τέκτων. Greek has also τύκος, chisel. Tvash-*tar* means a carpenter, but also maker and creator. The verb takshati or taksh-*n*oti still retains the meaning of cutting, splitting, and carving, but very soon we find it applied to the making of anything, a carriage, a thunderbolt, heaven and earth, also a thought, a word, a hymn, till at last it came to mean simply to make, as Rig-veda iv, 36, 3, pitárâ púnar yúvânâ *k*aráthâya tákshatha, "you made your parents young again to walk." To do.

Pâ*n*ini assigns to TVAKSH and TAKSH the

[1] This process is repeated in modern languages, e.g. to grow bold, to wax angry, to turn pale ; see A. Kühn, *Wurzelvariation*, p. 6.

meaning of thinning (tanûkarane). But he gives another root TAKSH (Dhâtup. xvii. 13), which he explains by tvakane, i.e. skinning, and in this sense tvak, skin, lit. what has been cut off, would have been traced back by him to the same root.

At all events the transition from cutting, shaping, trimming to making in general is perfectly clear. Even in Homeric times the τέκτων represents the stone-mason, the carpenter, the ship-wright, the wheel-wright, the worker in horn, in bone, in ivory, the turner, the joiner, the belt-maker[1] and other handicrafts, so that the generalization of its meaning became almost a matter of course. Τέχνη means art in general.

It is most likely that the German schaffen, too, from which Schöpfer, creator, meant originally to scrape, to polish, and then to make. This root appears in σκάπ-τω, to dig, to hoe, σκέπ-αρνον, a carpenter's adze, Lat. scabere, scabies, scobîna, file, Goth. scaban, scôf, to shave, and skapjan, skôp, to shape; O. N. skapt, shaft; and skip, ship. Even shape and ship, in friendship, would in the end come from the same source.

Another root RAK, to make, seems to me to have been applied at first to the arranging, crossing, and chaining of threads that were to be twined and platted, thus accounting for the Greek ῥάπτειν, to twist, to sew, and for the Lithuanian rìnk-ti, to collect.[2] Even the Sanskrit KAR, to make, I do not hesitate to connect with SKAR, in the sense of cutting, shearing,

[1] See Riedenauer, *Handwerk und Handwerker in den homerischen Zeiten*, p. 96; Schrader, *Sprachvergleichung*, p. 397.

[2] See H. Möller, *K. Z.* xxiv. p. 457. P. Schrader, *Ling.-histor. Forschungen*, p. 175, presupposes ϝράπ-τω and compares Lith. werpù, to spin.

in fact with the same root that gives us to shear, and in the Greek κείρειν and σκάλλειν. In Sanskrit we find kṛi-nâti having the sense of cutting and hurting, and the compounds upaskirati and pratiskirati clearly mean to split, to tear with nails, having nothing to do with kirati, to scatter. The meaning of cutting comes out very curiously in the Prâkrit kalpayati, to cut, and in kalpanî, scissors, etc., Sk. kṛipânî (p. 367).

These may seem bold combinations, but they are not without ample analogies in the history of language. In Latin materies meant wood, before it came to mean matter. In Greek ὕλη meant wood, before it was used in the sense of substance. In Sanskrit dravya, matter, if derived from dru, tree, would show the same transition of meaning, while, if derived from DRU, to run, to cause to melt, it would have had the special meaning of metal, before it took the general sense of matter.

The name for tree or wood, dru, has been derived from the root DÆR, to tear off, to decorticate, showing that the tree was conceived and named as the object and product of the act of felling, chipping, peeling, and shaping a tree, just as δέρ-μα was the skin torn off from an animal and dṛi-ti in Sanskrit a leather-bag.

To be strong.

Pânini assigns to DÆRmH the very general meaning of growing (vṛiddhau), which is probably intended for growing strong and firm. In all the passages where this root occurs, whether in nominal or verbal derivatives, firmness and strength are certainly the meanings conveyed by it. Still it seems far more likely that DÆRmH had originally a more special power, akin to that of DÆRBH, which is

explained by Pâ*n*ini by d a r b h e, i.e. tying together into a bunch. The most primitive method of getting compact and strong beams, girders, wheels, etc., consisted probably in tying together bundles of reeds or pieces of wood. We know that what is now a fluted column with its capital of drooping leaves was originally a bunch of reeds or lotus-stalks closely tied together, with tufts of leaves or flowers falling over the topmost band. The Indians in America still speak of w e a v i n g their grass lodges. In building them four poles were placed upright, at equal distances to form a square, each having a fork at the upper extremity for the reception of cross-pieces upon which to construct a roof. The sides of the square were closed by placing thin willow poles, vertically side by side, after which the broad leaves of water grasses and rushes were w o v e n[1] into them horizontally, from side to side.[2] The Sanskrit d*r i d h* a, strong, would therefore originally have meant the same as c o m p a c t, c o n c r e t e, t h i c k s e t.

DAM, to shape.

The root DAM, which exists in English as t o t a m e, in Latin as d o m a r e, means in Sanskrit to control (u p a s a m e), also to be controlled. But if we ask how d á m and d a m á could have the meaning of house (d a m p a t i, house-lord, d á m û n a s, belonging to the house), we should have to admit a more primitive and special meaning for the root DAM, namely that of joining, forcing, driving, and bending beams and planks together so as to turn them into some kind of shelter or cabin in which man can live. We should probably have to discover

[1] This expression throws a curious light on the passage in Plato's *Critias*, 116, B: *καὶ τῶν οἰκοδομημάτων τὰ μὲν ἁπλᾶ, τὰ δὲ μιγνύντες τοὺς λίθους ποικίλα ὕφαινον παιδιᾶς χάριν.*

[2] *Proceedings of the American Philosophical Society*, 1886, p. 297.

the original intention of DAM in the Greek δέμω, to build, δέμνιον, bedstead, and its secondary application in δαμάω, in δμώς, slave, ἀδμής, unmarried, and δάμαρ, wife.

Vagueness of these speculations.

The weak point in these speculations is that they are very apt to lead us too far. Mr. Edgren, for instance, thinks that we ought to connect DAM with YAM, to curb. This by itself is doubtful. Besides, what is the typical meaning of YAM? Professor Whitney tells us that it means to reach. He might as well say that it means to fly. The first meaning of YAM, as any one may see who consults Boehtlingk's Dictionary, is to hold, to support. This meaning appears clearly in such passages as Rv. i, 59, 1, sthûṅâ-iva gánân upamít yayantha, thou, Agni, supportest men like a strong pillar. In the Âtmanepada the same root has the meaning of holding oneself, standing, being strong; e. g. Rv. viii, 3, 6, índre ha vísvâ bhúvanâni yemire, for on Indra do all beings rest. But it likewise is used in the sense of keeping oneself under, submitting, or obeying; Rv. iii, 59, 8, mitrấya páñka yemire gánâh, the five tribes kept to or obeyed Mitra. Soon, however, to hold comes to mean to use or to wield. Thus the gods are said to hold firm or wield their weapons, or to hold forth with their weapons. They are said to hold the reins, to hold and manage anything, to hold and keep, or, as we should say, to protect and maintain, the dwellings of man.

To hold, then, assumes the meaning of to restrain, to subdue, or even to rule. Applied to the scales of a balance, it means to draw down, e. g. Sat. Br. yatarad yamsyati, which of the two will prevail.

Prati-yam means to be worth. Applied to the senses, they are said to be yata, controlled or subdued.

To hold or hold out something for somebody else came to mean to offer, to give, which is sometimes given as the fundamental meaning of the root. With prepositions this root is capable of the most varied application.

Thus anu-yam, to hold after something, means to aim or to throw at a goal; in the Âtmanep., to strive after. With â the root yam means to draw out, to lengthen; also to draw the bow, to aim. Âyata means simply long, and, as an adverb, intensely, violently. Â-yam also means to draw or bring near.

With vy-â, yam takes the meaning of tearing asunder, and in the Âtmanep. it means to exert oneself (sich anstrengen, sich zerreissen). The participle vyâ-yata often means strong.

With ud the meaning of yam changes to lifting up, and likewise to offering. In the Âtmanep. it is used for to exert oneself, to undertake something.

With upa, yam comes to mean to seize, to take for oneself, more particularly to take a wife or to marry.

With ni, yam means to restrain, to stop, to subdue. The participle niyata is used for what is settled, constant, regular.

With pra, yam chiefly means to hold forth, to offer. As upa-yam meant to marry, pra-yam is used for giving in marriage. The participle pra-yata often means attentive, serious, solemn.

With sam, yam means to hold together, to tame, to control. The participle sa*m*-yata*h* means self-restrained, and also prepared, ready.

There is, therefore, some similarity between the roots DAM and YAM, particularly in such special applications as δάμ-αρ, wife, and u p a - y a m, to marry, but whether YAM is really a secondary form of DAM, whether in fact the two roots are historically connected at all, is more than, for the present at least, we are able to say.

Mr. Edgren, however, goes, as we saw, even further. He not only connects DAM and YAM, but goes on to YUP, to join, YU, to harness, YU*G*, to join, YUDH, to fight, and treats all these roots as mere varieties of one common type. There are, no doubt, phonetic analogies for the transition of YAM into YU, but YU may also assert its own independence, quite as much as YAM, and we ought to admit frankly that we possess as yet no criteria to guide us in deciding in favor of the one or the other opinion.

YU, to join.

YU and YU*G*, to join or to be united in friendship and love, seem clearly to belong together, and if YUDH, to fight, meant originally to join in battle, to come to close quarters, this also may be traced back to the same source. But with every step in advance, the ice becomes thinner. As we find RUP by the side of RU and RU*G*, we might perhaps accept YUP by the side of YU and YU*G*. YUP means to check, and by a great effort this meaning could be got out of joining, namely if we remember that to join or to tether a horse to a post is the same as to hold and check it. But when we come to YU and YU*K*H with the sense of separating, it seems far preferable to admit two independent roots than to suppose that the same root could from the beginning have had two such opposite meanings.

Whenever there are two roots with two opposite meanings, we must always try to explain it. The problem that has to be solved here is the same as in the case of ready-made words which have two opposite meanings. We must try to trace the gradual steps by which the human mind travelled from one pole to the other. That this can be done in many cases, I tried to show in my "Lectures on the Science of Language," vol. ii. p. 273,[1] by tracing words expressive of black and white, good and bad back to a common origin. But with roots the case is far more difficult, because their changes belong to times without a vates sacer. All we could do would be to suppose that YU, used with a preposition such as vi in the sense of unjoining or separating, retained that meaning even without that preposition. But such a supposition would be a mere guess, and hardly within the pale of scientific thought, while the fact that there are in all languages homophonous roots has never been contested.[2]

Many possibilities.

In fact our road in running these old roots to earth is beset with so many dangers that few scholars only have ventured to follow it. The sphere of possibilities is so great that one hardly dares to assert anything for certain. Fick, for instance, who takes the root NAD as having originally expressed vibration, then sounding, roaring, and crying, identifies it with the Zend nad, to chide, and traces it further in the Sk. NID, to blame. According to him, nada and nadî, Sanskrit names for river, were derived from this root NAD, in the sense of roaring. This is, no doubt, quite possible, but if,

[1] See also *Hibbert Lectures*, p. 43.
[2] See before, pp. 180 seq.

as Fick supposes, NAD meant originally to move and then to vibrate, it would be equally possible to derive n a d a, river, from that root, and take it like r i v u s and f l u m e n, in the sense of running water.

This difficulty meets us again and again. It is very likely, for instance, that the root NAM expressed originally some peculiar kind of bending, such as the bending of wood in order to adapt it for the purpose of a wheel. In that case n e m i, the felly of a wheel, might be a remnant of that primitive special meaning. But it is possible also that NAM had already assumed the most general meaning of bending, before it was specialized again in the name of n e m i, felly. NAM.

Who can tell whether the root DÂ ever referred in the beginning to some special kind of giving? All that lies beyond DÂ seems gone, and though we may be certain that no such general or faded act as giving could have evoked its own special sound, it is useless to speculate on the antecedents of a root which had assumed its colorless meaning long before the Aryan family was broken up. "To give" may have been simply to offer, as a mother offers her breast to her child; or it may have been to distribute what was the common property of a family (DÂ, d y a t i, to divide); or it may have been to surrender something which had become one's own individual property: all this is possible, but there are no facts in the history of language to enable us to decide in favor of one or the other of these opinions. In modern languages this is very different, and when we see from what special beginnings the most general concepts have often sprung, we may gather courage in our treatment of more ancient DÂ, to give.

roots. To give, for instance, in German, is schenken, also used in the sense of suckling. This can be traced back to schenken in the sense of pouring out wine, as in einschenken, to pour out, Schenke, a public-house. But this schenken again comes from shank, German Schenkel, bone of the leg, which, being hollow, was used for drawing beer or wine from a barrel. Who is to discover such missing links in the darkness of the twenty thousand years ago?

Respecialization. The process of specializing general roots, which is so much more prominent in the historical period of language than the process of generalization, is often only a respecialization of roots, at first special, then general, and at last special once more.

I, to go. It has often been remarked that many roots in Sanskrit have the very general meaning of to go assigned to them. But in many of them we can still discover traces of more special kinds of going and moving. Thus KRAM means to stride (pâdavikshepe), VRA*G* to walk (mârgasa*m*skârâgatyo*h*), SARP to creep (gatau), DHRA*G* to glide (gatau), STIGH to mount (âskandane).

GAMII, to kick. Our own verb to go is not connected with the Sanskrit root GAM, to go, but had in the beginning a very special meaning. We shall often find it useful to study the transition of meanings in modern languages[1] in order to gather courage in tracing roots of a general meaning back to their original and special concepts in ancient times.

When we speak of children eager to get something,

[1] For generalization of special, and specialization of general meanings in French, see Brachet, *Etymological Dictionary*, Introduction, § 13.

we say in German, Sie zappeln darnach. There is no exact counterpart of this verb in English, but it means to kick with arms and feet in trying to get at something. Now in Sanskrit a root *GAMH*, meaning to kick or strike with the feet, is used chiefly of birds striking with their wings. Another root, *GEH*, which is wrongly interpreted by gaping, seems to me a mere variety of *GAMH*,[1] and to mean struggling or striving.

This root *GAMH* would explain O. H. G. gingo, desire, gingên, to desire.[2]

But it also exists under another form in Gothic gangan, O. H. G. and A. S. gangan, now the regular verb for going, but meaning originally kicking one's legs. This gangan was afterwards contracted into gân, gên, and gôn, and finally became the modern German gehn, to go, which is generally connected with the Sanskrit roots GAM and GÂ.

The roots I and GAM, however, disclose nothing special, they simply mean to go. But out of that general meaning an endless variety of new meanings can be and has been evolved, with or without the aid of prepositions or any other distinguishing elements. This process of specialization goes on uninterruptedly in all living languages. In German, for instance, gehn means to go away and to come near, as in Geh, allez, apage, and in nach Hause gehn, to go home. Lass mich gehn means Leave me alone; lass es gehn means Say no more about it. Sich gehn lassen is used for being free and easy. Die Uhr geht means the watch goes, der Teig geht, the dough rises, das Geld

[1] On the transition of amh into eh, see p. 351.

[2] See Grimm's *Wörterbuch*, s. v. gehn.

geht nicht, the money is not current, sein Mund geht, he is constantly talking. Es geht nicht is it is impossible, es geht an, it will do, Wie geht es, how do you do, es geht ums Leben, it is a matter of life and death.

If we see these various shades of meaning of one and the same verb, to go, why should it seem strange that in Greek, for instance οἶμη, a song or lay, should come from the root I, to go? We have οἶμος, ἀοιδῆς, the course of a song, and this οἶμος, way, is the same word as the Sanskrit ema, way, from I, to go. The derivative verb οἰμάω means to swoop upon, and this too comes indirectly from the simple root I, to go. Again, οἶτος, fate and doom, can hardly come from any other source, and usage alone can account for its being always used in a bad sense, though it was originally no more than the Latin itus in reditus, return, and differing from the Latin iter, itineris, journey, in its derivative suffix only.

The Greek ἰθύνω means to make straight, and it comes from the same root I, to go. Going, ἰθύς, was used in the sense of going straight, hence ἰθύω, to push forward, and also to desire, and ἰθύνω, to stretch forward, also to right.

With another application ἴ-της, comes to mean going, hasty, impudent, ἰ-ταμός, hasty, ἴθαρος, quick, in Sanskrit i-tvara, going, in Greek ἐΐθαρ, quickly, at once. Ἰσθμος also was originally no more than a road, vadum, in O. N. eið.[1]

In Sk. âyús, man, and ấyus, life, the root I, to go, is used in the sense of living, and as âyus would in Greek become αἶος, we may treat αἰεί for αἰεσι, αἰές, and αἰέν, in the sense of "always," as springing indirectly from the same root.

[1] Bugge, in Bezzenberger's *Beiträge*, iii. p. 100.

Another derivation in Sanskrit is évas, way, manner,[1] and the Latin aevum, age, age being itself a descendant from aevum (aevitas, aevitaticum), while a further step leads us on to aeternus, i. e. aeviternus.

But though the pliancy of roots is very great, and the variety of meaning expressed by one and the same root often quite bewildering, we saw that there was no necessity why we should under all circumstances admit one root only, in cases where two or three homophonous roots would solve our difficulties better. There are roots which have the same sound, and which no one would feel inclined to identify, such as GÂ, *g*igâti, to go, and GÂ, gấyati, to sing; GṚ, g*rin*âti, to sing, and GṚ, *g*âgarti, to wake; *G*Ṛ, *g*arate, to sing, and *G*Ṛ, *g*arati, to waste away. If the principle had ever been firmly established that homophonous roots must be identical roots, we should have to accept almost any connecting links by which meanings, apparently the most heterogeneous, might be held together, and brought back to one and the same starting-point. We might, for instance, argue, more or less plausibly that as TAKSH, from meaning originally to cut, comes to mean to shape (zuschneiden), to make, therefore KṚnT, to cut, might be identical with KṚnT, to spin, and with *K*ṚT, to join, because in the earliest time spinning and platting were frequently combined (cf. crâtes, mat, κάρτ-αλος, basket), and platting consisted in cutting and slicing reeds together. Again, DÂ, to cut, would have to be identified with DÂ, to bind, because

Homophonous Roots.

[1] The same transition of meaning from walk, way to manner, we see in Sk. âkâra, manner, and Lat. môs, if derived from meare.

in many cases binding is performed by cutting small threads and slicing them together, just as, to sort, for instance, means to separate, but also to join.

Fortunately, however, we are not driven to these forced explanations by any inherent necessity, and we ought not to resort to them, except in cases where we have real analogies to guide us. It is as yet a purely gratuitous assumption that one sound can at first express one concept only. It rests on another assumption, that there is some mysterious bond between the sound and meaning of a root. But even if there were such a bond, that would not exclude the perfect freedom with which at different times and in different places similar or even identical sounds may accompany different acts which they afterwards signified.

Root Æ.

There is, for instance, a root Æ, which is explained by such general terms as to go, to send. But the question is whether Æ, AR, to go, red. perf. âra, is really the same root which we find in *ri-no-ti*, ὄρ-νυ-μι, to excite, red. perf. ὄρ-ωρ-α, I have risen, or-ior, or-igo, and again in ar-us, wound, and ar-is, enemy. Curtius holds that the Greek and Latin languages split the root Æ into three, namely AR, in ἀρ-αρ-ίσκω, ar-tus, ἀρ-όω; ER, in ἐρ-έσσω, rêmus; OR, in ὄρ-νυ-μι, or-ior, etc. The same distinction, however, though not expressed phonetically, at least in writing, may have existed in Sanskrit from the very beginning. We might then distinguish three roots:

(1) Æ, with the meaning of to stir, to raise, and intransitively, to rise. This we find in Sk. *ri-no-mi*, and iy-ar-mi,[1] in ὄρ-νυ-μι, ὄρ-ωρ-α, orior; in

[1] *Rv.* i, 56, 4: íyarti renúm, he stirs up the dust.

ἰάλλω (ἰάρjω), to send, to shoot, O. H. G. îlan, eilen, and in Gr. ἐλ-αύνω, to drive.

Specially applied to the stirring of the soil, the root *Ar* took the meaning of ploughing. From this we have an old name of the earth, i*d* for ir, also i*d*â, and in Greek ἄρ-ουρα, in Latin ar-vum. Derivative words are found in Greek ἀρόω, ἄροτρον, in Latin arare, aratrum, in Gothic arjan, to ear, etc.

A second special application of the same root to the stirring of the water is found in Sanskrit aritra-s and aritra-m, rudder, aritâ, a rower, in Greek ἀμφ-ήρ-ης, or ἐρέτης, ὑπερέτης, ἐρέσσω, ἐρετμός, in Latin re(s)mus,[1] remigium, triremis, in A.S. âr, in Lith. ir-ti, to row.

(2) A second root *Ar* expresses the concept of going, and more particularly of regularly going, of proceeding, succeeding, fitting, as we still say il va bien, es geht, for it fits. From this Sk. *rikkhati*, ἔρχομαι, ἤλ-υθον, ἔπ-ηλυς; Sk. *riti*, way, manner; *ritu*, season, ara-s, spoke of a wheel, ἀρ-ιθμός, number; ἀρ-θρόν, membrum, cf. Sk. gâtram; aratni, elbow, ὠλ-ένη, ulna, ἄρ-μενος, fit, ἀρ-ηρότες, fitting together; ἀρέσκω, to please (ταῦτα ἀρέσκει μοι, cela me va); artus, link; Goth. ar-ms, arm, but not ἄρ-μός, link.

Used in a transitive sense this root expresses the idea of making things to go, fitting them, as in ἄρ-σα, ἦρ-αρ-ον, I fitted, ἀρτίζω, I prepare, artare and artire, to join.

(3) Quite independent of this would be a third

[1] Bopp, *C. G.* § 817 a, writes: "ruodar, what makes flow, from ῥέω, connected with rutrum, ῥέθρον, and radically perhaps with remus also."

root ÆR, in the sense of hurting, wounding, attacking. This we find in the ar-us, wound, ar-is, enemy, *ri*-tis, attack, ἔρ-ις, quarrel, ἐρ-έθω, ἐρ-εθίζω to annoy.[1]

But besides these three roots there is in Greek and Latin a root AL, which is supposed to represent an original AR, and which means to grow, and to make grow. In the former meaning it has the vowel o (ol), in the latter generally, though not always, the vowel a (al).

From this root with the meaning of growing, we have: —

(1) Co-alesco, to grow together, as in Gell. 12, 1, 11, nihil interesse putat cujus in corpore cujusque ex sanguine concretus homo et coalitus sit.

Ad-olesco, adolevi, adultum, as in Plin. 9, 16, 23, § 56, Non sine imbre adolescunt arundines.

Prôles, what grows up, children; proletarii, the great growing mass of the people, the plebs.

Sub-olesco, to grow up; suboles and soboles, a sprout, offspring.

Ind-oles (indu=in), the same as ingenium; cf. indi-gena.

Ab-olesco, to decay, to vanish; as nomen vetustate abolevit.

Obs-olesco,[2] êvi, êtum, to decay, to wear out, as in vestis obsolêta.

[1] See M. M., *Vedic Hymns*, p. 65; Curtius, *Grundzüge*, p. 340. Irrîto, to irritate, can hardly belong to this cluster, on account of its long vowel. It has been referred to Sk. râ, to bark.

[2] Bopp, *Comp. Grammar*, § 96, remarked, "that we divide with Vossius ob-solesco, not with Schneider, obs-olesco, requires no excuse." Yet Schneider was a safer guide.

(2) In the sense of making grow, we find the same root in Ălo, alui, altum, to nourish, as in Plaut. Rud. 3, 4, 36, Athenis natus altusque. Altus, high, like great from to grow.

Alumnus, foster-son, nursling, pupil.

Al-mus, kind, genial, particularly of Ceres, Venus, Terra.

Ab-oleo, -evi, -olitum, -ere, to destroy, to remove.

Ad-oleo, -evi, -ultum, to increase the gods, to worship them. Non. 58, 21; Virg. Aen. i, 704, flammis adolere Penates.

Lastly, elementum, lit. what makes grow, for olementum, the o changed into e as in bene, velle, etc.

It cannot be denied that to go, as the original concept of √R, might have been developed so as to express both the peaceful going together and the aggressive going against a person. Some scholars might even maintain that the idea of striking the earth or the water in ploughing or rowing was derived from that of attacking, nor would it be impossible to find some analogies for a transition of meaning from going to growing, and making grow. But all this could only be approved of or tolerated if it had been established once for all that identity of sound in roots proves always identity of origin, a principle which, as far as I can judge, receives no support either from theory or from facts. Professor Fick, for instance, in his "Wörterbuch," often keeps homophonous roots apart, but quite as often he assigns the most incongruous meanings to one and the same root. He distinguishes, for instance, between SKARD, to shine, SKARD, to break, SKARD, to vomit, and SKARD,

to jump, where the meaning of shining (éclater), breaking, and vomiting (brechen) might easily have been reconciled. But he treats SKAR, to divide (cer-no), KAR, to feed (κόρος), and KAL, to conceal (oc-culere), as mere varieties of the root SKAR, to pour out, to scatter, which seems to require a very great effort of combinatory imagination.

Many of the questions connected with the original meaning and the later development of roots can at present be answered provisionally only.

SVAR, to shine and to sound.

Should we separate, for instance, the root SVAR, to sound, from SVAR, to be bright, to glisten? It is true that the second root has yielded no verbal forms, but svàr, sky, sûra and sûrya, sun, require the admission of such a root. This being the case, it seems possible, even for us, to comprehend light and sound under the same concept of clearness or brightness, and one feels all the more inclined to admit the same process for the poetical language of our earliest ancestors.

BHÂ, to shine and to sound.

Again, may we admit a relationship between BHÂ and BHÂS, to shine, and BHÂSH, to speak? The analogy of φαίνω and φημί is tempting, but hardly convincing. Curtius, according to his system, admits a primitive root BHÂ, which became specialized as BHAN, BHÂS, BHAV, and BHAK. The simple root he sees in φη-μί, φά-τις, φω-νή, Sk. bhâ-nus, light, sun. Lat. fâ-ri, fâ-ma, fâ-s. The root BHAN appears, according to him, in φαίνω, φαν-ερός, φά-σις, Sk. bhan-âmi, I sound, bhan-âmi, I speak. The third form BHÂS occurs in Sk. in the sense of shining, and as BHÂSH, speaking. The

fourth form BHAV is traced by him in φαῦ-ος,[1] φῶς, light, and -φάων; the fifth in fac-ies.

From my own point of view I should look upon these five roots as parallel varieties, but even then certain phonetic difficulties remain. Curtius could not explain the transition of s into sh, as in BHÂS and BHÂSH (not Vedic), nor of BHAN into BHA*N*, for the change of a dental into a lingual always requires a motive. It may be that the pronunciation of the indigenous races produced BHÂSH and BHA*N* with linguals, instead of BHÂS and BHAN with dentals, but in that case we should expect BHASH to have the same meaning as BHÂS, which it has not. I am not convinced therefore that the concept of shining was raised into that of speaking, and I think we must admit the existence of two roots, one being BHÂ, to shine, the other BHÂ, to speak, each with its varieties; BHÂ, to shine, with BHAN, BHÂS, BHAV, and BHAK; BHÂ, to speak, with BHAN, BHÂSH.[2]

Curtius points out that in Greek φαίνω is often applied to the showing forth of speech, as in Soph. Antig. 621, κλεινὸν ἔπος πέφανται. He might have quoted a still stronger instance from Aristotle, Categ. c. 6, ἀπόφασις δέ ἐστιν ἀπόφανσίς τινος ἀπό τινος. But even that would hardly be sufficient evidence to show that to shine by itself was ever conceived as to speak. The nearest analogy is that of KÂ*S*,[3] to shine, and K*S*Â, pronounced KHYÂ, to tell; all other supposed parallel cases seem to me to break down on closer inspection.

[1] Cf. Saussure, *Système Primitif des Voyelles*, p. 54.
[2] See Edgren, l. c. p. 7.
[3] On KÂ*S* see Hübschmann, *Indog. Vokalismus*, pp. 56, 63.

Classification of Sanskrit Roots.

After these preliminary remarks I now give the first attempt at a classification of Sanskrit roots according to their meaning. From what I have said it will be clear that I myself look upon such a classification as purely tentative. I have tried to ascertain what is most likely to have been the original meaning of every root, but having to select one meaning only out of a great variety, the selection has often been a choice between two or even many evils. In a first attempt of this kind the chances of error must be very great, still I hope that those who will carefully examine the results at which I have arrived, will admit that they prove by overwhelming evidence that the meanings of roots are really what we expected them to be, and that they express the primitive social acts of primitive social men, and the states more or less closely related to such acts.

Order of Roots.

The order in which the concepts succeed each other is not very systematic. I have tried, as much as possible, to keep the special acts, such as to dig, the general acts, such as to find, the special states, such as to cough, and the general states, such as to stand, together. But it was impossible to adhere strictly to such a plan, because there are roots which express both acts and states, while in many cases it is difficult to determine whether the special or general meaning predominates. The English language lends itself best to an interpretation of Sanskrit roots, because in English as in Sanskrit the same verb may be used with a transitive or intransitive, or, more correctly, with an immediate and causative meaning. To shake means to shake a tree and to be shaking oneself, to stand means to place a

thing and to be standing, to boil to make boil or to be boiling. To drop, to burn, to grow, to move, all follow the same rule. Most roots in Sanskrit seem originally to have been capable of this double function, though after a time grammatical distinctions, which we now call active, passive, medial, and causative, were introduced to keep them apart. Sometimes, however, there is no outward distinction at all. Thus we have in Greek *ἐλαύνειν*, to drive, i. e. to move quickly, and to drive something; *φεύγειν*, to flee, and *φεύγειν τινά*, to flee some one; *σπεύδειν*, to hurry, *σπεύδειν τι*, to hurry something. There are besides many verbs in Greek which in the present express an act, in the second perfect a state, as *ἄγνυμι* and *ἄγνυμαι*, I break, *ἔαγα*, I am broken; *ῥήγνυμι* and *ῥήγνυμαι*, I tear, *ἔῤῥωγα*, I am torn. In English we can distinguish to fall and to fell, in German fallen and fällen, trinken and tränken, lernen and lehren. But we can also use I bleed in the sense of I am bleeding and I make bleed, to run in the sense of I run and I run a horse, without any outward change.

THE 121 ORIGINAL CONCEPTS.

1. Dig.
2. Plat, Weave, Sew, Bind.
3. Crush, Pound, Destroy, Waste, Rub, Smoothe.
4. Sharpen.
5. Smear, Color, Knead, Harden.
6. Scratch.
7. Bite, Eat.
8. Divide, Share, Eat.
9. Cut.
10. Gather, Observe.
11. Stretch, Spread.
12. Mix.
13. Scatter, Strew.
14. Sprinkle, Drip, Wet.
15[a]. Shake, Tremble, Quiver, Flicker.
15[b]. Shake mentally, be angry, abashed, fearful, etc.
16. Thrown down, Fall,
17. Fall to pieces.
18. Shoot, Throw at.
19. Pierce, Split.

20. Join, Fight, Check.
21. Tear.
22. Break, Smash.
23. Measure.
24. Blow.
25. Kindle.
26. Milk, Yield.
27. Pour, Flow, Rush.
28. Separate, Free, Leave, Lack.
29. Glean.
30. Choose.
31. Cook, Roast, Boil.
32. Clean.
33. Wash.
34. Bend, Bow.
35. Turn, Roll.
36. Press, Fix.
37. Squeeze.
38. Drive, Thrust.
39. Push, Stir, Live.
40. Burst, Gush, Laugh, Beam.
41. Dress.
42. Adorn.
43. Strip, Remove.
44. Steal.
45. Check.
46. Fill, Thrive, Swell, Grow strong.
47. Cross.
48. Sweeten.
49. Shorten.
50. Thin, Suffer.
51. Fat, Stick, Love.
52. Lick.
53. Suck, Nourish.
54. Drink, Swell.
55. Swallow, Sip.
56. Vomit.
57. Chew, Eat.
58. Open, Extend.
59. Reach, Strive, Rule, Have.
60. Conquer, Take by violence, Struggle.
61. Perform, Succeed.
62. Attack, Hurt.
63. Hide, Dive.
64. Cover, Embrace.
65. Bear, Carry.
66. Can, Be strong.
67. Show.
68. Touch.
69. Strike.
70. Ask.
71. Watch, Observe.
72. Lead.
73. Set.
74. Hold, Wield.
75. Give, Yield.
76. Cough.
77. Thirst, Dry.
78. Hunger.
79. Yawn.
80. Spue.
81. Fly.
82. Sleep.
83. Bristle, Dare.
84. Be angry, harsh.
85. Breathe.
86. Speak.
87. See.
88. Hear.
89. Smell, Sniff.
90. Sweat.
91. Seethe, Boil.
92. Dance.
93. Leap.
94. Creep.
95. Stumble.
96. Stick.
97. Burn.

98. Dwell.
99. Stand.
100. Sink, Lie, Fail.
101. Swing.
102. Hang down, Lean.
103. Rise up, Grow.
104. Sit.
105. Toil.
106. Weary, Waste, Slacken.
107. Rejoice, Please.
108. Desire, Love.
109. Wake.
110. Fear.
111. Cool, Refresh.
112. Stink.
113. Hate.
114. Know.
115. Think.
116. Shine.
117. Run.
118. Move, Go.
119ª. Noise, inarticulate.
119ᵇ. Noise, musical.
120. Do.
121. Be.

These 121 concepts constitute the stock-in-trade with which I maintain that every thought that has ever passed through the mind of India, so far as it is known to us in its literature, has been expressed. It would have been easy to reduce that number still further, for there are several among them which could be ranged together under more general concepts. But I leave this further reduction to others, being satisfied as a first attempt with having shown how small a number of seeds may produce and has produced the enormous intellectual vegetation that has covered the soil of India from the most distant antiquity to the present day.[1]

Further reduction of concepts.

I shall give a few instances how I think that the varying spheres of meaning of every root might be determined, first of all, in one language, for instance in Sanskrit, afterwards all cognate languages of one and the same family. There is a further step to be made, but that will be re-

Spheres of Meaning.

[1] For the benefit of Sanskrit scholars I give at the end in an Appendix a list of the actual roots which I have tried to classify under the 121 concepts, or rather from which I have previously extracted those concepts.

served for the distant future. After the sphere of meaning of a root, such as, for instance, KHAN, to dig, has been determined in the Aryan family, scholars should take a Semitic root, having originally the same meaning, whatever its sound may be, and compare the secondary concepts which the human mind spins out of this root in its Semitic home with the web which it has woven in its Aryan home. If the same process were then carried on to other classes of language, we should in the end gain a complete panorama of the intellectual toils and battles through which the human race has passed, and by which it has become what it is. But such a task cannot be attempted at present, if ever it can be carried out in all its completeness. At present I attempt no more than to show how a few small corners in the small field of Sanskrit may be surveyed, and the ramifications of a few Sanskrit roots be rendered intelligible.

The root KHAN.

The root KHAN means in Sanskrit to dig, and its sphere of meaning may be determined by the following concepts — digging, wounding, destroying, fastening, spade, mouse, hole, well, sky, nought.

This may seem a very irregular periphery of thought, and to a certain extent I doubt whether the special act of digging can be considered as the true central point. We saw that in form also the root KHAN is clearly a secondary root, and that its initial KH represents an original SK. A root SKAN does not indeed exist in Sanskrit, but KSHA*N*, which may represent it, retains the meaning of

wounding and injuring, while *KHÂ* (SKÂ), which may likewise be connected with SKAN, means distinctly to cut.[1]

If then we take KHAN, not only in the sense of digging, i. e. cutting open the soil, but also of cutting in general, we can account for the following derivations: —

(1) Words expressive of the Agent: khaná, khânaka (digger, thief, mouse, cf. cuniculus, rabbit, mine, canalis), khani, khanitár, â-khu (mole, mouse, pig, thief).

(2) Words expressive of the Act: khanana, khâti.

(3) Words expressive of the Instrument: khanayitrî (shovel), khanítră (spade), khâtra (κέντρον).

(4) Words expressive of the Result: khaná (hole), khăni (mine), khâta (hole, well, κῆτος, gorge, in κητώεις, Zend skata), khâ (well, source), kha (hollow, air, ether, naught).

Words expressive of Place: khaná (a digging).

As a verb, khan, to dig, is used for piercing with arrows, wounding, etc.

With ud, it means to dig up, to destroy.

With ni, to dig in, to hide, to fasten.

With pra, to undermine, to bring down.

In Zend, kan with aipi means to fill; with vî, to level; with ham, to rub.

I shall next examine some roots which I have classed together under the head of Platting, Weaving, Sewing Binding.

[1] See before, p. 368.

The root VÂ (vi. u), to plat, to weave.

It is impossible when we speak of primitive arts, such as, for instance, platting, spinning, weaving, to say whether we are to take their names in a very rude or in a more advanced sense. What we now call to weave was originally no more than platting, putting reeds or fibres side by side and tying them in some way or other so that they should hold together. The same word, however, which originally signified the rudest art, was often retained when that art had been brought to a higher state of perfection, just as we speak of a musket when the musket hawk has long been superseded by a gun, or as Flinte is retained in German as the name of a gun, though flints have long disappeared from our armories. Sometimes the same root means to plat in one language, to weave or to spin or to sow in another. Thus we find νέω and neo used in Greek and in Latin in the sense of spinning, while the O. H. G. nâjan means to sow, and Gothic nati means net. In such words as snâyu, tendon, the radical meaning seems to be that of binding, supposing that snâ is a parallel form of nâ, though the expression may also have been metaphorical, the tendons on the bones being like the threads holding together a woof. The modern term Histology means the science of textures in animal tissues.

Thus the sphere of meaning of VÂ comprises platting, weaving, combining, making of plans, poems, and songs; withies, reeds, flax, tissue, and fold in fourfold, etc.

(1) Agent: vâya, vayitar, vemaka, umâ[1] (spinster).

(2) Act: vayana, ûti, vâna, vayuna (wisdom).

[1] Upanishads (*Sacred Books of the East*, i. p. 151).

(3) Instrument: veman (loom). Material: vetra, vetasa (vitis, ἰτέα, οἶσος, withy), venu (reed), umâ (flax).

(4) Result: ûta (woven), ûti (tissue), otu (warp), and vaya, fold, in katur-vaya, fourfold.

The root VABH does not occur as a verb in Sanskrit, but its former existence is proved by such words as ûrna-vâbhi, wool-weaver, i. e. spider, by the side of ûrna-nâbhi. VÂ and VABH may be called parallel roots, and UmBH, to bind fast together, belongs to the same cluster. The Greek ὑφ-αίνω, the O. H. G. wëban, to weave, represent the same root. The sphere of meaning is weaving, combining, plotting, binding, spider. The connection between spinning and thinking is seen also in Sk. tarku (ἄτρακτος), spindle, and tarkayati, to think, to guess; likewise in ῥάπτω, meaning to spin and to contrive.[1]

The root VABH, to weave.

The root PÆÑK, though it has in Sanskrit the more general meaning of mixing, filling, satisfying, seems originally to have been used in the more special sense of platting and joining. It appears with that meaning in Gr. πλέκω for πέρκω, Lat. plec-to, du-plex, Goth. flaht (πλέγμα), O. H. G. flih-tu, and flahs, flax. Parca (like κλωθώ) clearly springs from the same source, possibly also O. H. G. felga, felly (see before, p. 222).

The root PÆÑK.

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[1] See Schrader, *Handelsgeschichte*, p. 175.

The next root we have to consider is KÆRnT, to spin, leaving out of consideration its possible connection with KÆRnT, to cut.

Sphere of meaning: Twisting, platting, spinning, mat, hurdle, — fold.

The root KÆRnT, to spin.

Agent: karttar.

Act: kartana; sa-*krit*, once, like sim-plex.

Result: k*a*ta, mat; cf. crates, κάρταλος, Goth. haurd-s, hurdle.

With pari, to tie around; with ud, to unloose.

The root *KÆRT* may be distantly connected with the preceding, but its own sphere of meaning is binding, bunch, summit.

The root *KÆRT*, to bind.

Agent: *krit*.

Instrument: *k*artana, fibula.

Result: *k*ûd*â* (?), bunch of hair, crista.

With ava, nis, vi, to untie, set free; with â, to bind.

Another important root, having the sense of joining, is NAH.

The root NAH (nabh), to tie, to bind.

Sphere of meaning: Binding, adorning, arming, strap, navel, neighbor.

Act: naddhi, binding.

Instrument: nah, girth; naddhrî, a leather strap; nâbhi, A. S. nafela, navel, ὀμφαλός, umbilicus. From it sa-nâbhi, a real brother (ἀ-δελφός), a paternal kinsman, affectionate, like. As to ûr*n*a-nâbhi, see VABH, p. 405.

Result: naddha, bound, adorned, armed; nahus, neighbor.

Our next root is GRAnTH, to tie.

The root GRAnTH, to tie, to join.

Sphere of meaning: Tying, joining, composing, hard, knot, trick, fraud, book.

Act: grathana.

Result: grathita, joined, adorned, hard; grathna, bundle; granthi, knot, joint, doubt, fraud; grathin, tricky; grantha, line, book.

With ud, to loosen; with upa, to surround.

Another very important and wide-spreading root is SÎV, to sew.

The root SÎV (syû), to sew.

Sphere of meaning: Sewing, joining, needle, thread, seam, edge.

Agent: sîvaka.

Act: sîvana, siyûti, sevana.

Instrument: syû (thread, needle), syûman (strap, rein, lock-string, ὑμήν), sûtra, string.

Result: syûta, syûna (sack), syûma (ray), sûnâ (basket).

Cf. Lat. suo, Gk. κασ-σύω, Goth. siujan, O. H. G. soum (seam), siuwan, to sow.

The root SI, which in certain verbal forms coincides with the root SÂ (so), to settle, is nevertheless in its nominal derivatives easily distinguishable by the prevalence of its palatal vowel. Its sphere of meaning is tying, bridge, snare, net.

The root SI, to bind.

We have setra, fetter, setu, fetter and bridge, prasiti, snare, net, and we see the vowel i likewise in Greek derivatives, such as *i-μάς*, strap, *i-μάσθλη*, whip; in O. H. G. seil, rope, etc.

The root SÂ, to settle, both active and neuter, meaning to hold down and to go down, is best known in composition with prepositions. Thus with abhi, it means to hold down, to destroy; with ava, to take off, to cease, to settle, to dwell, to settle on something, to determine, avasâya, meaning rest, determination, avasâna, end, death, anuvyavasâya, right concept. With adhyava it means to settle, to finish, to dare, to desire. Sâyam, evening, West, may come from the same root, in the sense of setting or going down.

The roots DÆRBH and DÆ*m*H, to tie into a bunch.

The sphere of meaning of DÆRBH and DÆ*m*H, two varieties of one and the same root, is binding together, fastening, bunch, strong, rope, long, very, hoping, composing.

(1) Act: dr*i*dbhi, binding together.

Result: darbha, bunch of grass, grass; darbha-ra*gg*u, rope of grass.

With the preposition pi, to cling to, to hope; with sam, to join, to compose.

(2) Act: dr*im*hana.

Agent: dr*i*h (dhr*i*k).

Result: dr*idh*a, strong, stronghold, iron; dr*idh*am, very.

With anu, to prolong, cf. dîrgha, long, *δόλιχος*.

The root DÂ, to bind.

Instrument: dâman, fetter.

Cf. *δέω δίδημι*, to bind, *δεσμός*, fetter, *διάδημα*, diadem.

Sphere of meaning: Binding, pledging, relation, deafness.

The root BAnDH, to bind.

Agent: bandhaka.

Act: bandhana.

Instrument: bandhaka, pledge.

Result: bandhu, relation; badhira, deaf.

The root PA*S* is not used as a simple verb in Sanskrit, but we have it as a denominative verb in pâsayati, to bind, and in nominal derivatives, such as:

The root PA*S*, to bind.

Instrument: pâsa, fetter.

Result: pasu, what is caught and tethered, i. e. cattle, pecus; Goth. faihu. In other Aryan languages this root has been very prolific. We find in Latin păc-iscor, pactus sum, I bind or pledge myself, in pâx, peace, pâcare, to quiet; in Goth. fahan, to catch. There is a parallel form with final media in πήγ-νυμι, to fasten, πάγη, snare, compages, fetter, pignus, pledge, and another with nasalization in pango, to fix, German fangen, to catch.

To give an idea of the wonderful variety of thought that may find expression through one such simple root as PA*S*, to fasten, to bind, I shall give a list, not of all, for that would be impossible within the limits of a chapter, but of the more important words in Greek, Latin, and German which can be traced back to this one single root.

In Greek, the verb πήγνυμι, πήξω, means I fasten.

πέπηγα, I stand fast.

πηκτός, stuck in, well put together, compacted, solid, congealed, curdled, frozen.

πηκτή, a net or cage to catch birds.

πηκτίς, a harp or pipe, joined of several reeds.

πάκτων, a boat, easily put together and taken to pieces.

πακτόω, to fasten.

πῆγμα, framework, scaffold, anything congealed, rennet.

πῆξις, fixing, freezing.

πηγός, well put together, solid, strong.

πηγεσίμαλλος, thick-fleeced.

πηγάς, rime, earth hardened after rain.

πηγετός, πάγετός, frost, rime.

πάχνη, hoar-frost, rime.

πάγος, a mound, hill (Areopagus), frost, scum on the surface of milk, salt.

πάγη, snare, noose, trap.

πάγιος, firm.

παχύς (pinguis), thick, stout, dull, stupid, παχύδερμος, thick-skinned.

πάσσαλος, peg, πασσαλεύω, to hang on a peg.

ἅπαξ, once.

In Latin we have, (1) With final tenuis:

paciscor, pactus sum, pacisci, to agree upon.

pactum and pactio, a compact, agreement.

pâx, a treaty, peace.

pâcare, to pacify (payer, to pay).

pâcificus, pacific.

(2) With final media:

pagere, in xii. tables, to settle by law.

compâges, a joining together, structure.

propâges and propâgo, a layer, offspring, descendant.

propâgo, to peg down, to propagate, to extend, to prolong.

pâgina, a page, compâginare, to join.

pignus, pledge.

pâlus (paglus), stake.

pâgus, settlement (paganus, a pagan).

(3) With final media and nasal:

pango, pepigi, to fasten, to set, to compose, to write.

compingo, to join, to compose.

impingo, to bind, to drive into, to urge; impactio, impact.

suppingo, to fasten underneath.

In German, too, we have two bases, one corresponding to pac, namely fahen, the other to pang, namely fangen.

(1) Fahen is the Gothic fahan, faifah, O. H. G. fâhan, and in the preterite fie and fiang, with nasal, part. gifangan. It means to catch, to take, to take root, etc.

Fähig, capax, clever, capable.

Fähigkeit, facultas.

Fach, snare (πάγη, pâsa); partition, wall; space between walls, space, time; business, occupation (as in Fachmann), fold.

-fach, as in vielfach, manifold.

(2) Fangen, to catch, to take, to take root, etc.

Gefangen, caught, imprisoned, Gefängniss, prison.

Empfangen, to receive, to conceive.

Finger, digitus.

However large the number of these derivatives, and however various their significations, they give no idea as yet of the real wealth that has been got out of this one small mine. All words which we have examined are words of broad and definite meaning,

and we have hardly said anything of the finer shades of thought and feeling which language has to express.

Empfangen in German means to receive, no longer to catch. But ein empfängliches Herz is not only a receptive, but a responsive or sympathizing heart.

Verfangen means to catch. But if we say, Dies verfängt nicht, we mean this does not tell, it does not touch the main point. Eine verfängliche Frage is a perplexing question, eine unverfängliche Bemerkung, an innocent remark. A shy girl is called befangen, a wild girl a Wildfang. Umfangen is to embrace, Umfang, the extent, umfänglich, lengthy. Anfangen is to begin, anfänglich means at first. Unterfangen is to undertake, but it generally implies to undertake something that is too difficult. If we went through all these derivatives, and added to them all their possible compounds, we might put together a small dictionary that would supply the materials for a not inconsiderable conversation.

Of course it might be said that the Sanskrit language, from which alone the roots and their concepts are taken, is only one of the Aryan languages; but I make bold to say that there are few concepts in English or Latin or Greek that could not be expressed with the words derived from Sanskrit roots.

I believe, on the contrary, that the number of roots necessary to account for the whole wealth of the English Dictionary, which is said to amount to 250,000 words, is smaller than that of Pâṇini's roots, even after they have been reduced to their proper

limits. Roots, which in Sanskrit left one or two words behind, have often, after the loss of their small progeny, become totally extinct, while in modern languages one single root has often, by the formation of primary, secondary, and tertiary derivatives, and by the elaboration of new meanings, increased the number of its descendants to an enormous extent. One feels almost tempted to compare the fertility of the human mind in the production of words with the fertility of nature in the production of plants and animals. Here as there the same simplicity of the elements, the same unbounded variety of form, and the same carelessness as to the survival of any but the fittest. The English Dictionary comprehends the survivals of many languages and many dialects, but of the millions of words that have become extinct there is no record, except here and there in a few classical texts and ancient inscriptions. "The living are few, the dead are many."

There is no sentence in English of which every word cannot be traced back to the 800 roots, and every thought to the 121 fundamental concepts which remained after a careful sifting of the materials supplied to us by Pâṇini. If I say every word and every thought, this must, of course, be accepted cum grano salis. There are words in English, as there are in Sanskrit, of which we do not know the etymology, and shall probably never know it. But they constitute a small remnant, which for our purposes may be ignored as compared with the immense majority of words that has been accounted for.

I know of few things which are at the same time so humbling and so elevating as the small number of concepts out of which all our thoughts and our

words have been elaborated. All that we admire, all on which we pride ourselves, our thoughts, whether poetical, philosophical, or religious, our whole literature, our whole intellectual life, is built up with about 121 bricks. If they are given us, we can erect a temple which rests on the earth and touches the sky, nay, which encircles even what is beneath the earth and above the sky; for, wonderful to say, we can name, not only what we see and hear and handle, but even what eye has not seen nor ear heard. I do not in all this forget the architects, the poets, the prophets, and philosophers; but what would architects be without stones and bricks? The Science of Language startled the world some years ago with the announcement that it could reduce the 250,000 words, now filling an English Dictionary, to about 1,000 roots. The Science of Thought goes beyond this, and assures us that every thought that ever crossed the mind of man can be traced back to about 121 simple concepts.[1] I may seem to some of my readers to use exaggerated language, but the only exaggeration I am really guilty of is my taking for granted that what has been proved of Sanskrit, can be proved of any other Aryan language also. Whether that is so or not, I gladly leave to be settled by future scholars. But even if at present we have proved no more than that the myriads of thoughts

Idées mères.

[1] In some excellent articles contributed to the *Bibliotheca Sacra* by the Rev. George F. Wright (1876, Oct., p. 690), it is said with great truth: "How the vast number of complicated concepts which man employs could have been packed away for use in the simple sounds to which he gives utterance, surpasses our comprehension. The creative power of mind which has given origin to the material machinery of the nineteenth century must take a very humble place beside that of the men who first put thought and words together. The former harnessed heat and electricity; the latter made available the true Promethean fire."

that swarmed through the hive of the Indian intellect are all the offspring of not more than a hundred and twenty mother-ideas, a step in advance has been made by the Science of Thought such as few philosophers have ever dreamt of.

CHAPTER VIII.

FORMATION OF WORDS.

Radical Period.

I HAVE sometimes spoken of roots and their formation as representing a complete period in the history of the human mind. In a certain sense this may be true, but in a very restricted sense only. Growth does not submit to hard and fast lines, and we have no right therefore to suppose or to assert that all the roots of a language were elaborated before another step was made in advance. Many roots show by their form, and still more by the concepts which they embody, that they belong to what we should call secondary stages of thought, and though we can perfectly understand that all the purposes of language could be realized with roots only — this is the case to the present day with Chinese — we have no right to imagine that, until every single root had been finally settled, no progress was made in the synthesis of roots, i. e. in the formation of words.

When I speak of roots I do not simply mean a phonetic element which has been discovered as shared by a number of words in common. That would be to a certain extent Pâṇini's view of a root. But though it would explain the process by which, under proper precautions, a root may be discovered, the result of that process might be something purely abstract and unreal. I mean by root something real, something

that was actually used in conversation, though I willingly grant to the logician that a root, as soon as it forms part of a sentence, should be distinguished by a new name and be called a word.

Now the shortest sentence of all is, no doubt, the imperative, and it is in the imperative that almost to the present day roots retain their simplest form. If KHAN is the root, khana is the imperative, meaning Dig! If DÂ is the root, dâ, give! might have been the imperative. DÂ, however, and similar roots take dhi or hi as a suffix of the imperative in Sanskrit. Thus AD, to eat, becomes ad-dhi (ad-hi) eat thou! Whether this hi or dhi was originally a pronominal element, indicating the second person, or whether it was purely exhortative, is a question which I gladly leave to those who have better ears than I have. Anyhow this form was old, and appears almost identical in Sanskrit and Greek, as in

Imperative.

*s*ru-dhí=κλῦθι.
i-hí=ἴθι.
pi-p*ri*-hi=(ἐμ)πίπληθι.[1]

To us there seems a great difference between the imperative and the indicative. Yet the fact remains that in Greek the second person plural and dual in the active and passive, indicative and imperative, are identical, *φέρετον, φέρετε, φέρεσθε, φέρεσθον*. In Sanskrit, on the contrary, several forms of the imperative coincide with the imperfect, if we drop the augment, which in the earliest Sanskrit is frequently absent, and always so after the prohibitive, that is, the negatively imperative, particle mâ; namely, 1, 2, 3 pers.

[1] Curtius, *Verbum*, vol. ii. p. 46.

dual, 1, 2 pers. plur. Parasm., 2, 3 pers. dual, 2 pers. plur. Âtmanep.; and in the Second Conjugation, 2, 3 pers. dual, 2 pers. plur. Parasm., 2, 3 pers. dual, 2 pers. plur. Âtmanep.

This similarity in form between the imperative and the indicative present in Greek may be explained by a similarity in intention, and we must remember that even in modern languages we can say "you go" instead of "go," or in German "du gehst jetzt gleich" instead of "geh jetzt gleich." In Sanskrit, however, the similarity between certain forms of the imperative and the imperfect is apparent only, because, by a reference to Vedic Sanskrit, what seem to be forms of the imperfect without the augment, turn out to be really Let or subjunctive forms.

If we accepted Aristotle's definition that every enunciation (ἀπόφανσις) declares what is either true or false (De Interp. c. 4), the imperative could hardly claim that name, as little as what Aristotle mentions, the prayer (εὐχή). From a higher point of view, however, the imperative also may be called a sentence, for it makes the hearer understand something which the speaker wishes him to know. Nor is it difficult to imagine a transition from an imperative to an indicative sentence. Suppose a threatening command had been conveyed to a gang of lazy slaves — "Dig!" would not a blubbering utterance of the same word have been the natural response, deprecating by its frequent repetition the punishment that was impending on their backs?[1] Nay, even the most primitive form of a conditional sentence would soon spring from these early monosyllabic conversations. A master requiring his slaves to labor and

[1] See Pân. iii, 4, 2, lunîhi lunîhîty evam lunâti.

promising them their food in the evening, would have no more to say than "Dig — Feed," and this would be quite as intelligible as "Dig, and you shall have food," or, as we now say, "If you dig, you shall have food."

But we are anticipating what belongs to later phases of human speech.

Next to the imperative, what is now called the Vocative, a kind of nominal imperative, belongs likewise to the earliest attempts of language. As little as the imperative presupposes a scheme of conjugation, does the vocative presuppose a complete system of declension. It is possible to imagine a vocative even before the formation of a real noun. As soon as the root YUDH, to fight, is used in the sense of fighter, it has passed, even though it undergoes no outward change, through a complete process of predication. This process, which we may represent by "Fight-here" or "Fighting-he," gives us a concept and a noun. YUDH has then really become what is called a general term, applicable to many. But in an early phase of thought, even roots may have been used as what we should call proper names, or nick-names, and these singular terms would hardly require that previous process of predication which produced such words as digger, fighter, striker. Proper names, in a primitive state of society, seem often to be mere imperatives, such as "Fear-not," Trust-God," etc. Here then imperative and vocative would run very close together. "Strike" might be an imperative, and at the same time, though possibly with a change of intonation, a vocative also, just as now the people who follow a boat-race shout "Stroke," the name of the first rower, but mean at the same time, though they do not say so, "Strike out." Vocative.

The Categories.

All this, however, forms the prelude to language only. Real language begins, as Aristotle knew perfectly well, with the sentence, with predication or κατηγορία. The word κατηγορία, and the different forms of it, the famous Categories, have been exposed to many misunderstandings, but their true meaning is neither more nor less than what its name implies, namely predication. This is the sense in which Aristotle first used the word, and it is the sense in which for the present I mean to use it.

Aristotle speaks generally of ten categories (Cat. iv. 1), namely: —

(1) Οὐσία, Substantia, Substantive, e. g. horse.

(2) Ποσόν, Quantum, Adjective, quantitative, e. g. two cubits long.

(3) Ποιόν, Quale, Adjective, qualitative, e. g. white.

(4) Πρός τι, Ad aliquid, Adjective, relative, e. g. double.

(5) Ποῦ, Ubi, Adverb, local, e. g. in the market.

(6) Ποτέ, Quando, Adverb, temporal, e. g. yesterday.

(7) Κεῖσθαι, Situm esse, Verb, intransitive, e. g. to stand.

(8) Ἔχειν, (se) Habere, Verb, intransitive, e. g. to be thus or thus.

(9) Ποιεῖν, Agere, Verb, active transit., e. g. to cut.

(10) Πάσχειν, Pati, Verb, passive, e. g. to be cut.

Aristotle evidently asked himself, What do we predicate when we form an enunciation? and he naturally took his answer from the Greek language, such as it was spoken in his days. But it is a mis-

take to imagine that he borrowed the categories from Greek grammars. Grammars and grammatical science hardly existed in his time, certainly not as an independent branch of knowledge. On the contrary, when grammar became separated from logic, grammarians borrowed Aristotle's logical terms, and used them for their own purposes. It is right, therefore, to say that Aristotle borrowed his categories from the Greek language, it is wrong to say that he borrowed them from Greek grammar.

After this, everything will be easy and intelligible. In grammar the categories came to be used as the names of what we now call the ten parts of speech, and in that form the framework which had been borrowed from language was handed back, as it were, to the students of language.

At a later time, when philosophers looked for the highest genera of things, these categories proved again extremely useful, because it was found that the most general praedicamenta corresponded, as was natural, to the highest genera that could be predicated. Aristotle himself takes the categories as *σχήματα τῆς κατηγορίας*, but also as *γένη τοῦ ὄντος* or *τῶν ὄντων*.[1]

Lastly, when the question was asked how we came to predicate at all, these categories, though slightly modified by successive philosophers, came in again as the fundamental concepts of the mind, the Stammbegriffe des Verstandes, the nature of which, whether as the result of repeated experience and generalization, or as the antecedent sine qua non of all experience, still continues to be one of the most important subjects of philosophical controversy.

[1] T. H. Green, *Works*, vol. ii. p. 208.

Almost every philosopher has amused himself in pointing out flaws or redundancies in Aristotle's table of categories, yet that table is a very wonderful achievement, if only rightly interpreted. Aristotle, speaking and thinking the Greek language, asked himself under how many different heads the words which he himself used in predication could be classified, or how many kinds of predication were to be found in that language which represented to him all languages, namely Greek.

As every sentence consisted of a subject and a predicate, all words might be divided into those which expressed substances, and those which expressed attributes. The first category was therefore that of substance, the predication of οὐσία, which gives us τὰ ὄντα, things. We must remember that we do not predicate τὸ ὄν, that which is, but that we predicate οὐσία, substance, and thus create τὸ ὄν. This is a distinction that has often been overlooked.

First Category, Substance.

The first category is fundamental and stands by itself. All other categories predicate attributes or accidents, and they always presuppose the first category of οὐσία, because attributes can be predicated only after the category of οὐσία has been applied to something which may become the subject of further predication. Grammatically this distinction often seems to vanish, because adjectives may almost always, without any change of form, be used as substantives, and substantives as adjectives. We may use adjectives as substantives, as when we say Sapientes dicunt, "Sages say;" but here homines, men, is understood. We may use substantives as predicates, as when we say "Bucephalus is a horse," but in that

case horse does not predicate substance, οὐσία, but quality, ποιόν. It is, in fact, an adjective in disguise. It means that Bucephalus has all the attributes of a horse, or belongs to the class of things signified by the name of horse. Equus is used instead of equinus. But when I say hic equus est albus, equus, horse, could not be replaced by equinus. Equus here predicates οὐσία, substance, it refers to an ὄν, a thing; it is a true substantive, the name of something substantial.

While then the first category predicates οὐσία or substance of something which thus becomes an ὄν, a thing, all the other categories are meant to predicate something of the ὄν. If we say that "the horse is six feet high," or better, if we say, "the horses are five in number," we predicate a ποσόν, or quantum. If we say the horse is strong, we predicate a ποιόν or quale. If we say the horse is stronger than the mule, we predicate a πρός τι, an ad aliquid, a relation. Categories ii-iv.

These three categories which differ essentially from the first, in so far as they predicate something of something, while the first category names something of which attributes can be predicated, differ but slightly among themselves. The quantum differs from the quale, because it simply counts, while the quale defines or qualifies, and the ad aliquid may be explained as qualifying with reference to something else, not only when we actually use a comparative, but also when we speak, for instance, of the master, i. e. of a servant, or of a servant, i. e. of a master.

The next two categories refer to space and time. They have been called adverbial, but it would be

equally correct to describe them as declensional, for they are generally conveyed by the cases of nouns, excepting the nominative and vocative, both of which have really no right to be called cases or πτώσεις in the philosophical meaning of that word.[1]

Categories of Space and Time.

The last four categories are realized in the verb. If we take the ninth category first, we see that it is expressed by active transitive verbs, such as "I dig the ground," "I cut the wood." The tenth is the passive, and of course, intransitive verb, "I am struck," "I am loved." The seventh category is active, but intransitive, such as "I move," "I walk," "I shake," "I fear," "I stand," where the action remains in the agent, without necessarily going out towards something else, that is, where the verb is intransitive.

The verbal Categories.

The most difficult category of all is the eighth. It likewise comprises intransitive verbs, but verbs which express, not an act, but a passive status or habitus, what Aristotle expresses by ἔχειν or ἕξις, as in κακῶς ἔχειν, Old Germ. ubil haban, and illustrates by ὑποδέδεται and ὥπλισται, i. e. "he is shod," "he is armed."

Other interpreters, however, take ἔχειν not in the sense of se habere (sich verhalten), but of habere, though they do not explain how Aristotle could have illustrated that category by ὑποδέδεται and ὥπλισται. Augustin,[2] for instance, gives eight kinds of habere, all with the sense of having or

[1] If Sanskrit grammarians exclude not only nominative and vocative, but the genitive also from the name Kâraka, this is because they think of it chiefly as predicative or as γενική.

[2] *Categoriae* (ed. Lugdun. 1563), vol. i. p. 421.

possessing, such as, to have something in the mind, like justice; to have something in the body, like whiteness; to have length; to have a ring on the finger; a dress on the body; to have arms and feet; to contain wine as a cask; to possess something like a house. But all this would originally be expressed by active transitive verbs, such as to possess, to hold, to contain, and would not require the admission of a separate category. This shows at how early a time Aristotle's philosophy began to be completely misunderstood.

That these categories were gathered from the Greek language, and that Aristotle, if he had been a Jew or Chinaman, might have collected a different set of categories, may be readily admitted. Still whatever language we have to deal with, we shall always find in it one category to express subjects, others to express the predicates of such subjects, the quantum, quale, and ad aliquid, these being in space, and the situm esse, habere, agere, and pati, all of which involve a being or continuing in time. We need not have definite grammatical forms to distinguish nouns, adjectives, verbs, adverbs, and particles, but there must be the categories which we express by these grammatical formations.

We saw before that a substantive, for instance, could stand for an adjective, as in hic est equus, and we might say that an adjective may take the place of a verb, as in equus est canus, which is much the same as equus canet. Language might dispense with adjectives altogether. But in spite of these uncertainties, the table of ten categories was found to supply a convenient frame for grammarians who filled it with the Partes Orationis, assigning

Substantives to the first category (οὐσία), to which properly speaking, pronouns also belong; adjectives to the second, third, and fourth categories, ποιόν, ποσόν, πρός τι; adverbs and prepositions, which may be called transitive adverbs, to the fourth and fifth categories, ποῦ and πότε; and the four remaining categories to the verb. Conjunctions might be classed under adverbs determining the relation, not of single words, but of whole members of a sentence, while most of the cases too might find a place under that heading.

Objections to Aristotle's Categories.

If we examine the objections which have been made to Aristotle's categories, we shall generally find that they arise from a misunderstanding of Aristotle's real purpose. All he cared for was that nothing that is ever predicated in any sentence should be without a place in his system. Mill in his "Logic" says that there is no place for the feelings. This is a mistake. If feelings are predicated, they can only be predicated, either as states of feeling, and they would then fall under the eighth category of ἔχειν, se habere, as, for instance, "he feels tired," "he feels hopeful;" or, if they are active transitive feelings, they would belong to the ninth category of ποιεῖν, such as "he desires food," "he watches the serpent;" while, if they are conceived as sufferings, they might be claimed by the tenth category of πάσχειν, as "he has been terrified."

Again, if Mill remarks that by the side of the category of κεῖσθαι or situm esse, that of ποῦ or ubi is redundant, he confounds two things. The category of κεῖσθαι is meant for the predication of a status, that of ποῦ, ubi, for the predication of the place, as ποτέ is for the predication of the time, in which that status, or act, or suffering happens to be. Kant has

rightly separated the fifth and sixth categories, as forms of sensuous intuition.

Let any one try to analyze any sentence which he may meet with, and he will be surprised to find that no predicamentum which occurs in it is without a place in the table of predicamenta drawn up by Aristotle. We might, no doubt, bring the categories of quantum, quale, and ad aliquid under the more general category of quality, those of ubi and quando under that of situation in time or space, but we should not gain much by this, and for practical purposes these subdivisions have certainly proved most useful.

Whether the categories which Kant calls the categories of modality might claim a place in Aristotle's table, is a question that has often been discussed. In grammar they are expressed by the indicative, the subjunctive, and the optative, and by certain gerunds.[1] It seems better, however, to treat these as syncategorematic rather than as categorematic, and they can often be dissolved into a sentence on which the chief sentence depends. "All men may be good" is much the same as "I believe that all men are good."

Categories as determining the Growth of Words.

But these categories which proved of so much utility to the early grammarians, have a still higher interest to the students of the science of language and thought. Whereas Aristotle accepted them simply as the given forms of predication in Greek, after that language had become possessed of the whole wealth of its words, we shall have to look upon them as representing the various processes by which those Greek words, and all our own words and thoughts too, first assumed a settled

[1] See Reisig, *Vorlesungen über Lateinische Sprachwissenschaft*, § 10.

form. While Aristotle took all his words and sentences as given, and simply analyzed them in order to discover how many kinds of predication they contained, we ask how we ever came into possession of such words as horse, white, many, greater, here, now, I stand, I fear, I cut, I am cut. Anybody who is in possession of such words can easily predicate, but we shall now have to show that every word by itself was from the first a predication, and that it formed a complete sentence by itself. To us, therefore, the real question is, how these primitive sentences, which afterwards dwindled away into mere words, came into existence. The true categories, in fact, are not those which are taught by grammar, but those which produced grammar, and it is these categories which we now proceed to examine.

Words formed by applying the Categories to the Roots.

If the Science of Language had taught us nothing else except that all terms, whether singular or general, concrete or abstract, denotative or connotative, collective or partitive, positive or negative, relative or absolute, univocal or aequivocal, and whatever other divisions may have been devised by logicians, have all been formed from roots as the embodiments of concepts, I doubt whether it could have conferred a greater boon on the study of philosophy in general. The whole history of philosophy has been called a struggle over the origin and the true nature of concepts and abstract terms, and the question how from the singular and concrete the human mind could possibly have arrived at the general and the abstract still forms the chief battlefield of modern philosophy. The Science of Language has proved by irrefragable evidence that human thought, in the true sense of that word, that is, human

language, did not proceed from the concrete to the abstract, but from the abstract to the concrete. Roots, the elements out of which all language has been constructed, are abstract, never concrete, and it is by predicating these abstract concepts of this or that, by localizing them here or there, in fact, by applying the category of οὐσία or substance to the roots, that the first foundations of our language and our thought were laid.

Illustrations.

On this point there ought to be no doubt or wavering. We deal here with facts, and facts only. We may explain them as we like, but no one is able to deny them. Though the subject has been alluded to several times before, a few more illustrations may here be useful.

Goose.

Why was a goose called goose? As to the history of the word, we trace goose or A. S. gós back to gans, German Gans, to Latin 'anser for ganser, and lastly to Sk. hamsa. The root from which hamsa is derived must be GHÂ or GHAN, to open the mouth, to gape, in Greek χαίνω, from which also χάος, χάσμα, etc. The Greek χήν, χηνός comes from the same root, and the goose therefore as well as the gander was originally conceived as the gaping or hissing bird, whether applied to the wild or the tame bird.

Wolf.

The wolf was called vrika, from a root VÆRK (Sk. vrask), to tear, to lacerate, and the same word appears in Greek as Fλύκος, in Latin as lupus for vlupus, in Gothic as vulf-s.[1]

The pig was called sus, ὗς, O. H. G. sû, Gothic svein, all from a root SŬ, to bring forth, to breed,

[1] De Saussure, p. 99; Snow, *Transactions of the Oxford Philological Society*, 1884–1885, p. 18.

the sow being probably considered as the most prolific of domestic animals. This name should not be confounded with what seems to be a purely mimetic baby-name, namely sû-kara or su-kara, i. e. the sû-maker, the grunter, which exists in Sanskrit, but in Sanskrit only.

Pig.

Man was called homo, probably the earth-born, from the same source as χαμαί and humus. Here we have to presuppose the concept of earth, derived from some unknown general concept, and from this substantival concept of earth, homo, Goth. guma, ἐπιχθόνιος, was formed. Man is also called in Sk. marta, mortalis, the mortal, from MAR, to decay, or, as distinguished from other animals, manu, the thinker, from MAN, to remain, to retain.[1]

Man.

Birds were called vi, plur. vayas, Lat. avis, Greek οἰ in οἰωνός, probably from a root VÎ, and VÂ, which also yielded names for wind in Sanskrit and Zend, vâyu and vayu.[2] This name therefore marked birds simply as flying creatures. As other distinguishing qualities of birds came to be observed, they were called in Sk. pakshin, possessed of wings, from paksha, wing, and this Benfey compares with Gothic fugl, fowl. We have besides in Sanskrit such names as patrin, feathered, from patatra-m, feather; a*n*da*g*a-s, egg-born or oviparous; dvi-*g*a, twice-born, first as egg, then as bird; kha-ga, sky-goer, etc. Most of these, however, are of late and poetical origin, and therefore not to be found in any of the other Aryan

Birds.

[1] See M. M., *Biographies of Words*, ii. p. 243.

[2] See Justi, *Handbuch*, s. v. vi. Pictet's statement that vî in Zend means fish, is unfounded.

languages. In Greek we find besides *οἰωνός*, *ὄρνις*, *ὄρνιθος*, supposed to come from a root *ṚI*, to rise; *πτηνόν*, the flying animal, etc. In Latin we find volucris, flying, ales, alitis, winged, etc.

It is curious that there is no common name for fish in the Aryan languages, and neither Sk. matsya, nor Greek *ἰχθύς*, nor Latin piscis clearly reveals its original predicative power. Fish.

Worms are called kṛimi in Sanskrit, kirmi-s in Lithuanian, cruim in Irish, all derived from the root KRAM, to walk or roam about. In Gothic, vaúrm-s is the regular representative, while in Latin, vermis, and in Greek *ἕλμις* show e, which has induced some scholars to refer them to the root VAL, to twist.[1] Worms.

There are of course many words which cannot, or at all events, which have not yet been analyzed etymologically, and the conceptual meaning of which remains therefore for the present doubtful. But the fact that all nouns had a predicative meaning is established on such abundant evidence that no doubt is possible as to the general principle that all nouns presuppose concepts, that these concepts are embodied in roots, and that therefore all words, derived from roots, are from the very beginning abstract, not concrete terms.

And if we reflect for a moment, we shall see that it could hardly have been otherwise. For how should, for instance, an oak have been named? It does not utter a sound that could be imitated. It does not evoke an expression of awe that could be fixed upon as its name. The only way to name it, is to know it; and what is to Naming impossible without radical concept.

[1] Curtius, p. 552; De Saussure, p. 18.

know, except to bring something under some general concept, such as what is cut down, what is burnt, what is decorticated, or what gives shelter or food.

Oak.

This was done, for instance, in the Greek name for oak, φηγός, derived from a root φαγ, in Sanskrit BHA*G*, meaning originally to divide, then to eat. The oak was conceived and named as the food-tree, supplying food both for man and for cattle. In Latin f a g u s became the name of another food-tree, the beech, the German die B u c h e, and as the old material used for writing in Germany consisted of small staves or tablets of beech-wood, our modern word b o o k, das B u c h, is indirectly, yet by an unbroken succession, derived from the concept of dividing and eating.

Horse.

A horse, no doubt, might have been indicated by some sound imitating the neighing of the animal. But in e q u u s, Sanskrit a s v a, Old Saxon e h u, we can discover nothing like the sound of neighing, or tramping, or kicking, but we arrive by a careful analysis at the root A*S*, expressive of the concept of sharpness and quickness, from which we have likewise the name for mental quickness and sharpness, such as a c i e s and a c u t u s. The concept of cutting, sharpening, being sharp and quick had therefore to be elaborated first, before the conceptual, as distinct from the intuitional, knowledge of the horse could have been elaborated. That name, the quick, might no doubt have been applied to many other animals, but having been repeatedly applied to one kind, it became unfit for other purposes, and survived in the struggle for existence as the fittest name of the horse.

Serpents also are quick enough when they fall

on their prey, but while they shared this character with other animals, what seemed to distinguish them and at the same time to render them most formidable, was their power of throttling or squeezing. They were therefore called ahi in Sanskrit, ἔχις in Greek, anguis in Latin, all from a root AH or AMH, to squeeze, or sarpa, serpens, from a root SARP, to creep, to go.

Serpents.

If therefore Darwin and other ethnologists tell us that there are savages who have not a single abstract term in their language, they ought first of all to give us the names of the savages to whose languages they refer,[1] and secondly they ought to explain how these savages could possibly have formed the simplest names, such as father, mother, brother, sister, hand and foot, etc., without previously possessing abstract concepts from which such names could be derived. There may be languages, nay, there are most highly cultivated languages, such as Chinese, for instance, without separate words for whiteness by the side of white, for goodness by the side of good, but the first abstraction takes place in the formation of such words as white or good, while whiteness and goodness are really abstract words of the second degree.[2]

Are there Savages without abstract terms?

There are of course exceptions, but they are so clearly exceptions as hardly to deserve separate no-

[1] A writer in the Buenos Aires *Standard*, Sept. 11, 1886, states that he has collected a dictionary of 32,430 words of the Yahgan language, Darwin's lowest of the low.

[2] If Milligan in his *Vocabulary of the Dialects of some of the Aboriginal Tribes of Tasmania*, p. 34, maintains that "they could not express the abstract qualities, such as hard, soft, warm, cold, long, short, round," he probably means abstracts of the second degree, such as hardness, softness, but not hard and soft. See Sayce, *Introduction to the Science of Language*, ii. p. 6.

tice. Singular terms, such as Mausoleum and Academy, are not derived from conceptual roots, but from Mausolus and Academus, just as a Hansom is derived from Mr. Hansom, and Mackintosh from Messrs. Mackintosh and Co. In some cases such singular terms can be changed into general terms by the addition of the indefinite article or by being used in the plural. But even proper names, such as Sokrates, for instance, presuppose the previous existence of two such concepts as sos, sane, and kratos, strength, and the first Sokrates was called by this name in order to indicate his sound strength. We may also change a proper name, like Sokrates, into an appellative, a Sokrates, into a verb, "to Sokratize," and into an adjective, Sokratic.

Apparent exceptions.

Again, admitting cock, for argument's sake, to be a mimetic word, — though this has by no means been proved, — we could derive from it coquet, strutting like a cock, coquetterie, coquelicot, a cock's comb, and a wild red poppy,[1] etc. But all this lies outside our problem. These words express late excrescences, not the early and natural growth of language, and they are possible only after the general framework of language has been finished, or after the broad furrows of thought have been drawn, just as when music has once been fully elaborated, and brought to its highest perfection in a symphony, it is possible for a Beethoven, as for instance in his Pastoral Symphony, to introduce, by a kind of false analogy, the actual notes of certain birds, without thereby committing himself to the theory that all music was in the beginning an imitation of the notes of birds.

[1] Lectures on the Science of Language, i. p. 411.

Every root embodies a concept, because it embodies the consciousness of our own repeated acts. When we ourselves strike, strike, strike, we have the consciousness of striking, and when we accompany these strokes with the sound of Thud or Tud or Tap, we have in these sounds the natural embodiment of that consciousness. It does not matter whether we call the concepts, expressed by roots, general or abstract, because every concept must be both general and abstract; general, because it always applies to repeated acts; abstract, because much that is peculiar to each individual act of striking has been merged in the concept of striking. It is important also to observe that these self-willed acts are not the object of sensuous observation only, but of immediate knowledge or consciousness.

Original predication.

While, as we saw, the imperative use of a root can hardly be called language as yet, true language begins as soon as we predicate, that is to say, as soon as we use our categories. We use our categories, we predicate, we form propositions not only when we say "a man is mortal," but when we say for the first time "man" or "mortal." I had to point this out before, when answering the objection that words could not claim any independent existence, which is true in one sense, but not in another. Nothing, it is true, can exist in language except what is a sentence, i. e. what conveys a meaning, but for that very reason it ought to have been perceived that every word must originally have been a sentence. The mere root, quâ root, cannot be called a sentence, and in that sense a mere root may be denied the dignity of a word. But as soon as a root is used for predication, it becomes a word, whether outwardly it

is changed or not. What in Chinese is effected by position or by tone, namely the adaptation of a root to serve the purposes of words, is in the Aryan languages achieved by means of suffixes and terminations, though often also by change of tone. We saw that, in an earlier stage, the Aryan languages too could raise a root into a word, without the aid of suffixes, and that, for instance, YUDH, to fight, could be used in the five senses of the act of fighting, the agent of fighting, the instrument of fighting, the place of fighting, and the result of fighting. For the sake of distinction, however, as soon as the necessity began to be felt, the Aryan language introduced derivative elements, mostly demonstrative or pronominal, which though we can no longer trace them back in every case to their original source, must be credited with having had some original purpose. Thus from YUDH, we have —

(1) The agent of fighting, y o d h - a.

(2) The act of fighting, y u d h or y u d h i (dat. y u d h - a y e).

(3) The instrument of fighting, (â) y u d h - a.

(4) The place or time of fighting, y o d h - a n a.

(5) The result of fighting, y u d h - t a (y u d d h a).

From KHAN, to dig, we have —

(1) The agent of digging, k h a n - i.

(2) The act of digging, k h a n - a n a.

(3) The instrument of digging, k h a n - i t r a.

(4) The place or time of digging, k h a n - a.

(5) The result of digging, k h â - t a, hole.

It must not be supposed, however, that language formed these five classes of words from every single root. Such words only were formed as seemed to answer some practical purpose. It also happened

very often that one derivative was used with two or three different purposes, and that new derivatives were formed from old ones, till at last language had supplied everything that mind or heart could desire.

The First Category of Substance.

After we have once gained such concepts as digging, fighting, shaking, etc., what we really do in applying the so-called category of οὐσία or substance, is to predicate the roots embodying these concepts of h i m, or t h a t, or h e r e, or i t. This simple process gives us the words expressive of Act, Agent, Instrument, Place, Result, etc. The demonstrative elements which were to express the subject were, no doubt, very vague at first, but in the earliest stages of language real demonstration or pointing with the finger, besides gestures and looks, were used to supplement the deficiencies of speech. In one sense this category of substance corresponds to what is called the category of causality. It names the objects as the causes of our percepts and concepts, and thus creates our objective world.

The Second, Third, and Fourth Categories.

We saw that the adjectival categories of q u a l e, q u a n t u m, and a d a l i q u i d, like that of s u b s t a n t i a, were not used for the first time when people said "the sun is bright," but when they predicated the quality of brightness or the act of shooting out light, and said, as it were, "brightness-here."[1] Adjectives, in fact, were formed, at first, exactly like substantives, and many of them could be used in both characters. There are languages in which adjectives are not distin-

[1] It is impossible to express the meaning of roots except by verbal nouns such as shining, or abstract nouns such as brightness. The Hindu grammarians use the locative of an abstract noun.

guished from substantives. But though outwardly alike, they are conceived as different from substantives the moment they are used in a sentence for the purpose of predicating or of qualifying a substantive.

The "hole is dark" would have been expressed originally by "digging-it" = "hiding-here," or "hiding-somewhere." "Hiding-here" might afterwards be used in the sense of a hiding-place. But when it was used as a mere qualifying predicate in a sentence in which there was but one subject, it assumed at once the character of an adjective, it became really, to use Aristotle's expression, a ῥῆμα, not an ὄνομα.

In most languages, adjectives can be used again as substantives by adding an article. If sapiens is wise, hic sapiens is this sage. Likewise all substantives can be used as adjectives. If I say "this man is black," man is a substantive; if I say "the black also is a man," man is to all intents and purposes used as an adjective, and homo may in that case be replaced by humanus. In most languages, however, certain suffixes have been set apart, or have survived, definitely attached to adjectival functions.

The Fifth and Sixth Categories, Ubi and Quando.

The categories of where and when, Kant's forms of intuition, are always secondary, because they presuppose substantives, pronouns, and adjectives, and further define them in space and time. I-bi, here, presupposes the pronoun i, this: noctu, by night, the substantive noctu-s. These categories are mostly represented by the cases of nouns and by adverbs.

The category of where (ποῦ) must be taken to include whence and whither.

After a time local and temporal relations expressed by adverbs and cases of nouns assume a causal and

modal meaning. Post hoc becomes propter hoc;[1] while in German weil, humanitus comes to mean humanely, σοφῶς, wisely.

The verbal Categories.

While the first category predicates substance, the second, third, and fourth quality, the fifth and sixth place and time, the remaining categories predicate acts and states, or, in a very general sense, qualities continuing in time.[2] And here again the first verbal predication does not take place when we form a complete sentence and say "the carpenter cuts," but when for the first time we say "cutting-I," "cutting-thou," "cutting-he." While "Dig-here," i. e. digger, may be used as a substantive or as an adjective, but without any indication of the duration of the act of digging in time, it seems that in "Dig-he" "Dig" is the important element, which is predicated of me, thee, him, and it, and predicated as an act or state continuing in time.

These are the very broadest outlines[3] of the process by which conceptual roots were predicated, by which they came under the sway of the categories, became substantives, adjectives, adverbs, and verbs, or by whatever other name the results thus obtained may be described. The minute details of this process, and the marvellous results obtained by it, can be studied in the grammar of every language or family of languages.

Besides the division of words according to the ten categories, grammarians and logicians between them

1 Leibniz, *Nouveaux Essais*, III, 5; Schopenhauer, *Werke*, ii. 49.

2 Hence the German name for verb, Zeitwort. Aristotle, *De Interp.* 3, ῥῆμα δέ ἐστι τὸ προσσημαῖνον χρόνον; *Poet.* c. 20, ῥῆμα δὲ φωνὴ συνθετή, σημαντικὴ μετὰ χρόνον.

3 I have treated the same subject in my "Letter to Chevalier Bunsen," published in his *Christianity and Mankind*, in 1853.

General and Singular Terms.

have introduced several other divisions which, as they constantly occur in philosophical discussions, must be subjected to a careful examination by the student of the science of language and thought. Some of these technical terms have been used in very different senses by different schools of philosophy; some seem to be of very little use, and it will be necessary therefore to determine which of them it will be expedient to retain, and what sense we ought to ascribe to them in the Science of Thought.

Logicians distinguish between Singular and General terms. The former are said to denote anything that exists or can be conceived to exist once only, such as Sokrates, the earth, the sky, the Bible, Parliament, etc. The latter are explained as the names of anything that exists or can be conceived to exist more than once, such as house, book, horse, man, etc.

Let us remember what we had to point out before, that words can claim no separate existence, but are in reality always parts of speech, parts of a sentence. Singular and general terms, therefore, have likewise no independent existence, but are singular or general terms only in so far as they form part of a sentence. But though no words by themselves are either singular or general, we might say nevertheless, if our account of the origin of words is right, that every noun or ὄνομα is originally a general term, because it predicates a root, i. e. a concept, which is always general, of something. If rex, king, meant originally "steering-here," man-u-s, man, "thinking-here," these were by their very origin and nature general terms, applicable to all steerers and all think-

ers. Only by being referred to this or that person did they become singular terms, as when we say "this man," or "our king," while they are general as soon as we use them in the plural, "men," "kings," or with the indefinite article "a king," "a man."

The right definition therefore of a singular term is that it is an originally general term referred to one person and in consequence used in the singular, while other general terms are referred to more than one person and used in the dual or plural. When I say "this man is John," "this man" is a singular term: when I say "John is a man," "man" is a general term.

When used with the indefinite article, a noun like "man" or "king" becomes at once an adjective, predicated of a, in the sense not of one, but of some one. It is a general term in a grammatical disguise.

Singular terms, in the strict sense of the word, are said to be proper names only, because they have no intension, or, as others would say, because they denote one object only, and connote nothing. I say, they seem to do so, but they really do so in modern languages only, after they have lost their original connotation or attributive power. Originally every proper name was significant. Quintus, like Pontius, was really a name given to the fifth child, and as there might be fifth children in different families, it would have been quite possible to form a general proposition, such as, "All Quinti are free from military service." Short and Long, Brown and Black, were all originally significative, before they became proper names. Excepting such words as gas or od, nothing can exist in language which was

not originally significative. Even John was in Hebrew a significant term, and when used as a Christian name, it meant originally a child whose saint was St. John.

After making this reservation, however, we may admit that, at present, proper names, having lost their predicative power, are singular, i. e. denote one person only, unless we raise them again into general terms by means of the indefinite article. When we speak of a "Sokrates," in the sense of "a sage," Sokrates has become a general term in disguise.[1]

Sometimes the whole meaning of a term is changed, according as it is used as a singular or as a general term. When I say, "Jupiter is a god," god is a general term, applicable to several beings besides Jupiter. When I say, "God is omnipotent," God is a singular term, and excludes the very possibility of any other being that could be called God.

Are Adjectives General or Singular Terms?

It has often been asked whether adjectives are general or singular terms. Now it is quite true that adjectives were originally substantives, bright meant originally "shining somewhere," green meant "growing-somewhere," just as rex meant "steering-here." It was by usage that certain of these substantives were set apart, in some languages at least, for adjectival purposes, i. e. for the purpose of predication and qualification only. Juvenis was used for young, albus for white, bonus for good, meaning no longer a young man, or a white thing, or a good thought, but the attribute by which a man is distinguished as young, not old, a thing as white, not black, a thought as good, not bad. In that form ad-

[1] See before, p. 434.

jectives are general terms, though not substantival general terms, and, like all general terms, they could be used as singular also, as soon as they were joined with the definite article. "Hic juvenis" is singular, and so is "hoc album," i. e. this white (spot) on a cow, or summum bonum, the highest good. When Horace says, qui miscuit utile dulci, "he who mixes what is pleasant with what is useful," he means, "whatever is or may be called pleasant with whatever is or may be called useful," or, as we might say (for reasons to be explained hereafter), "pleasure with usefulness."

In a sentence, however, an adjective as such is always meant for a predicate, it expresses a ποιόν, quale, not the οὐσία, substance, and as such it cannot be anything but general. Whatever view we may take of the operations of our mind and their expression in language, when we say "this thing is sweet," we do not mean that "this thing is a sweet thing," — experience never supplies a thing that is sweet and nothing else, — but that "sweet" is one out of many attributes of this thing. If we speak subjectively, we mean that the sensation of this thing, say sugar, is accompanied by the sensation of sweet, not by the sensation of another sweet thing. If we speak objectively, we mean that this lump of sugar is sweet, i. e. causes in us a sensation which we call sweet. Sweet simply signifies a class of sensations which go by that name; it cannot be called singular, therefore, in any sense of the word, but must be taken as general.

We cannot enter here on the question whether there is such a thing as a substance, different from its attributes, or attributes different from their sub-

stance. Language does not take cognizance of these refinements, but follows the vulgus. According to Berkeley,[1] for instance, "to say a die is hard, extended, and square is not to attribute those qualities to a subject distinct from and supporting them, but only an explanation of the word die, and a die is nothing distinct from those things which are termed its modes or attributes." Philosophically there is much to be said for this, but it is not the kind of truth which we must expect from language. Language distinguishes between the die and its hardness, and while it would treat "die" as a singular, "dice" as a plural term, it would distinguish it carefully from "hard," for the simple reason that "hard" cannot occur by itself, cannot stand on its own legs, can never be conceived as an individual.

Collective Terms.

Collective terms are really general terms which in certain languages grammar allows us to treat as singular terms. This, however, is not the usual explanation. Collective terms, we are told, are words like regiment, names of a number of things joined together as a whole. Now this is true, as a matter of fact. A number of soldiers form a regiment, but the original concept of regiment is not a number of soldiers, but "what is ordered or commanded by a general." True collective words are equitatus, cavalry, which is really conceived as a number of equites, or senatus, which was meant for so many senes or old people as formed the council. Humanitas was meant originally for many men or all men, conceived as a class or as a whole, and this we see most clearly when we translate humanitas by man-kind. Our word

[1] *Works*, i. p. 181.

youth, like the Latin juventas, stands for a number of young men, Romana juventas was meant for juvenes Romani. We may imagine some kind of difference between juvenes and juventas, but the difference is one of sentiment rather than of fact. These are the real collective terms, and we shall meet with them again, when we come to abstract terms, because many of them, without any outward change, have become, what are called, secondary abstract terms. Youth, like juventus, from meaning a number of young men, and all young men, has come to be used in the sense of the attributes of all young men, conceived as a whole. "His youth has carried him away" means "the qualities of young men, taken as a lump, have carried him away."

The collective terms ordinarily mentioned as such in our Handbooks of Logic are Parliament, which is called collective because it consists of two Houses, each House, because it consists of many members; or the Bible, because it consists of many books or biblia. But in this sense almost every term may be called collective. If Library is a collective term, because it contains so many books, so is book, because it consists of a collection of pages, so is page, because it consists of a collection of lines, so is line, because it consists of a collection of words, so is word, because it consists of a collection of syllables, so is syllable, because it consists of a collection of letters. I doubt whether anything is gained for logical purposes, if we extend the meaning of the name collective so as to comprehend all such terms.

Anyhow, if they are to be called collective, it

would be desirable to have another class of partitive terms, and to call shilling, for instance, a partitive term, as opposed to sovereign, which would be a collective term.

It has been supposed that if singular terms correspond to Kant's category of Einheit, general terms to that of Mehrheit, collective terms would answer to the category of Allheit. This, however, is true of some collective terms only; what really corresponds to Allheit are universal terms, as when we use humanitas in the sense of mankind, i.e. all men.

There is no reason whatever why collective terms should be used as singular only. "Parliament" in the sense of our English Parliament is, no doubt, a singular term, but we can use it as a general term, when we speak of the Parliaments of the world. "Bible" is a singular term, but it becomes general when we speak of the Bibles of the human race. Only if collective terms have assumed a universal character, as in humanitas, mankind, it would be almost impossible to use them again as general terms, or to employ them in the plural.

Abstract and Concrete Terms.

Another very common division is that into abstract and concrete terms. It is extremely difficult to say what abstract and concrete mean, and a mere juxtaposition of the different definitions given of these terms by the most prominent philosophers would teach a very useful lesson. These terms have no inherent meaning of their own, so that we could say "abstract means this, and does not mean that." Even to say that abstract should mean this and not that, is more than any human being is entitled to do. But what

every philosopher has a perfect right to say is that abstract, as used by him, shall have such and such a meaning. If Aristotle possessed that right, so did Mill.[1] Abstract means what Aristotle wished it to mean, or whatever any philosopher wishes it to mean. The authority of a man like Aristotle is no doubt greater than that of the ephemeral philosophers of our time, and to change the meaning of a name, invented and defined by one of the historical leaders of thought, is more or less presumptuous. Still it is far better that every writer should say in what sense he means to use a certain term, than that he should use it with a vague traditional meaning only.

Abstract is a term that goes back to Aristotle, not so concrete, and much confusion would have been avoided if, instead of concrete, logicians had been satisfied with using the term non-abstract. With Aristotle abstraction means principally the taking away or dropping of certain ingredients of our percepts. He applies it first of all to a work of art, a statue, which comes by ἀφαίρεσις, i. e. abstraction, from a block of marble (Phys. i, 7) ; but afterwards to ideas, which by our dropping what is accidental in them are raised to their true and permanent form. Mathematics, for instance, are founded on ἀφαίρεσις, or abstraction, because they treat of the necessary forms, without any reference to the matter of things. Thus abstract, according to Aristotle's view of aphaeresis, would mean everything which, as the general, has been separated in our thoughts from the singular, and in consequence can be no longer the object of sensuous perception, but of intellectual conception only.[2]

[1] *Logic*, i. 8, 7.

[2] *Metaph.* xi (K) 3 ; (xiii (M) 2.

Concrete, however, is not an Aristotelian term, though some scholars have taken it for a translation of *συμπεφυκότα*. The fact is that no name was really wanted for what remained after abstract terms had been distinguished by their own name. If abstract is the proper adjective of a concept, sensuous or intuitive would have been the proper adjective of a percept, and there was no necessity for inventing a new term, such as concrete. Nor is it quite clear who first introduced that term, and in what sense it was first used. Some think that concrete is that in which the quality has grown together with the substance, while abstract is the quality apart from the substance. Others, again, take concrete in the sense of solid, in which Lucretius uses it, for instance, in concreta copia materiai (Lucr. i, 1018). I should say that non-abstract or sensuous would be far more intelligible than concrete, and though it is impossible to get rid of so old a term as concrete, it will be well to remember that so clear a thinker as Aristotle is not responsible for it.

Berkeley on Abstraction.

We saw before that some of our greatest philosophers deny that there is such a thing as a general abstract idea. Berkeley[1] scouted the thought that we could have abstract ideas, such as man, animal, body, and he only admitted some very primitive kind of abstraction, as when "we consider the head, the eye, the nose, each by itself, abstracted and separated from the rest of the body." Idea with Berkeley meant a picture or Vorstellung; an abstract idea, therefore, would have been

[1] *Treatise concerning the Principles of Human Knowledge*, Introduction, p. 140.

with him a conceptual percept, which is self-contradictory. The followers of Hume might possibly look upon the faded images of our memory as abstract ideas. Our memory, or, what is often equally important, our obliviscence, seems to them able to do what abstraction, as Berkeley shows, never can do, and under its silent sway many an idea or cluster of ideas might seem to melt away till nothing is left but a mere shadow. These shadows, however, though they may become very vague, remain percepts; they are not concepts. Professor Huxley, in his "Life of Hume,"[1] seems to imagine that such a transition is possible. "An anatomist," he says, "who occupies himself intently with the examination of several specimens of some new kind of animal, in course of time acquires so vivid a conception of its form and structure, that the idea may take visible shape and become a sort of waking dream." But a waking dream is not a concept, and his very words show that what he is speaking of is a faded percept, with here and there a sharp outline, but not what is meant by a concept. Noiré, speaking of the same mental process, says ("Logos," p. 175): "All trees hitherto seen by me may leave in my imagination a mixed image, a kind of ideal presentation of tree. Quite different from this is the concept, which is never an image."

But though Berkeley denies the possibility of an abstract idea, taking idea in his own sense, we ought not to do him injustice. He fully admits, for instance, that we can reason about the length of a line without attending to its breadth; he only denies that we can have a mental picture of such a line. He uses notion in this case, and it would probably not

[1] Page 96.

have been difficult to convince him that what he means by notio, is nomen.

Mill on Abstraction.

I had to refer once more to Berkeley's view of abstraction, because it will help us to understand better the view of abstraction propounded by Mill and other modern philosophers. While Berkeley in his own philosophical dialect admits the possibility of a notion, or, what we should call, the concept of a line without breadth, Mill in his dialect denies that we can conceive it, because with him, in this passage at least, conceiving means imagining. "We can reason," he writes, "about a line as if it had no breadth; because we have a power, which is the foundation of all the control we can exercise over the operations of our minds, the power, when a perception is present to our senses or a conception to our intellects, of attending to a part only of that perception or conception, instead of the whole. But we cannot conceive a line without breadth, we can form no mental picture of such a line; all the lines which we have in our minds are lines possessing breadth."

This shows how careful we must be in learning the dialect of each philosopher, though even then it is often not easy to get at the exact meaning of their words, as in this very passage it is difficult to know where, except in the mind, we can keep those lines about which we reason as if they had no breadth, and what we can keep of them except some kind of picture.

Mill's own account of abstraction is not very different from that which Berkeley tried to demolish, and, so far as I can judge, has demolished. According to Mill, the proper meaning of to conceive is to form

a mental representation,[1] and this would correspond to Berkeley's ideas. "We get the conception of an animal," he says,[2] "by comparing different animals, and when we afterwards see a creature resembling an animal, we compare it with our general conceptions of an animal; and if it agrees with that general conception, we include it in the class. The conception becomes the type of the comparison." And again:[3] "The mental operation which extracts from a number of detached observations certain general characters in which the observed phenomena resemble one another, or resemble other known facts, is what Bacon, Locke, and most subsequent metaphysicians have understood by the word Abstraction."

This may be so, nor do I doubt for one moment that a logician is capable of performing that process. What I doubt, with Berkeley, is whether any other mortal has ever passed through these trials. I believe, as I said before, that every honest reasoner will confess that Berkeley was right when he said that no one ever caught himself in this process of abstraction, that is, in looking at John, James, and Peter, and dropping their mouths, their noses, their eyes, and all the rest till nothing remained of them but the abstract idea expressed by the general term of man. What really takes place when we imagine we are forming abstract ideas is, according to Berkeley, that we use the signs of particular ideas, any one of which these signs or names indifferently suggest to the mind.[4] According to Locke, on the contrary, abstract and general terms are the signs of (also the only tangible proof of our possessing) abstract and general ideas.

[1] *Logic*, ii. 7, 4.
[2] Ibid. iv. 2, 3.
[3] Ibid. iii. 2, 5.
[4] L. c. p. 144.

In all this conflict of opinions the only point on which all philosophers seem to be agreed is our possessing general terms. They may differ about their nature and origin, but they cannot deny their existence. It is for the Science of Language to account for their origin and explain their real nature.

The Science of Language, by inquiring into the origin of general terms, has established two facts of the highest importance, namely, first, that all terms were originally general, and secondly, that they could not be anything but general.

Abstract originally the same as General Terms.

Before, however, we can fully utilize this discovery for our own purposes, it will be necessary to ask the question, whether there is really any difference between a general and an abstract term, and between a singular and a concrete term. This, to a formal logician, may sound a very heretical question, but to those who wish to study the historical growth of the human mind, it is a question that must be asked, and must be answered.

Whether abstraction means, according to some philosophers, the leaving out of certain parts of our experience, so that, for instance, there remains of animals nothing but their having four legs or their being quadrupeds, or whether, according to others, it means the drawing out of certain parts of our experience, so that in seeing animals we attend to nothing but their having four legs, in both cases it is clear that the term quadruped must be applicable to a class of animals, and must therefore be called a general term. Abstract and general are therefore two inseparable qualities of the same term, which is called abstract on account of the process by which

it was obtained, and general on account of the character which it assumed.

Concrete the same as Singular.

And if there is no real difference between abstract and general terms, neither can there be between their opposites, viz. between concrete and singular terms. We call them singular because they apply to objects which exist once only, and we call them concrete simply because they are not abstract.

Now what does the Science of Language teach us? It teaches, what cannot be repeated too often, that all names were originally both abstract and general, and that it was impossible that they could have been anything else.

Every Name General and Abstract.

We know as a matter of fact that every name was formed from one root, and from one root only. Every root expressed originally a concept, viz. the consciousness of our own repeated acts, and even afterwards, when it came to express states of feeling, it always remained conceptual and general.

If, therefore, anything had to be named, its name, as derived from a root, could predicate one attribute only. Hence, even though the name was meant for an individual object, it was, by necessity, the name of other objects likewise, of all things, in fact, which shared in the same attribute, or, of a class of things. Thus in analyzing, for instance, the name of wolf, Sk. *vṛika*, we found that it was derived from a root VRA*SK*, to tear, to lacerate, and meant therefore originally no more than "a tearing thing." It might thus have been applicable to any animals dangerous to the homestead, to foxes quite as much as wolves, but by usage and by necessity it became re-

stricted, till at last it meant wolf and wolf only. This process of restriction is essential for the purposes of language, and goes on to the present day. Thus the Greeks restricted ποιητής, maker, to a poet, the Romans auctor, to an author. Avica, bird, contracted to auca, became the exclusive name of the goose, alogon, brute, of the horse. And even at the present day people in Scotland speak of birds, when they mean partridges, of fish, when they mean salmon, and of the Book when they mean the Bible.

The same process of naming is repeated in later phases of language. The name for animal, for instance, meant originally no more than a thing that breathes, animal being derived from anima, and anima from a root AN, to breathe. It did not predicate voluntary motion, or anything beyond breathing, all the other attributes of animals being understood, but not expressed.

In a similar way an elephant, besides many other names, was called hastin, from hasta, trunk. The trunk evidently struck people as an important character, as something by which this animal could easily be known and distinguished, and thus it supplied one of its names (gnomen). Other names, however, were not excluded, and we see in the history of language a constant repetition of that tenative process of knowing and naming, until, out of a large number of what Bacon might have called nomina temere a rebus abstracta, one survived as the fittest, its etymological meaning became forgotten, and its intension was settled in the end by scientific definition.

There was no other way of forming names. One attribute had to be abstracted, whether by attention

to one, or want of attention to others, and that attribute, when expressed by a root, became the name, not of one only, but of all objects sharing in that attribute, till by the necessities of language, as a means of communication, it was more and more restricted, and by the necessities of language, as a means of exact reasoning, it was more and more accurately defined. Every name therefore was by necessity an abstract and a general term. This character was innate in every word, and though it became hidden when words were applied to singular and concrete things, it breaks out again at once, without any such complicated process as Berkeley derides and Mill believes in, as soon as the singular and concrete things vanish more and more from our mental focus, while the name remains what it was from the beginning, abstract and general.

As the whole of this phase, which in the history of language and of thought lies beyond the formation and the final settlement of words, was unknown to earlier logicians, they are not to be blamed for not having perceived the real solution of the question, how abstract and general names arise. They naturally began with concrete and singular names, and they either were unable to get beyond them at all, as in Berkeley's case, or they invented what Green so graphically describes as a Donkey-race, in which he who knows least wins by arriving first at the highest and hollowest abstraction.

Later Phases of Abstraction.

Let us, however, now place ourselves in the position of those observers of human thought who, like Aristotle, had a ready-made language to think in, and knew nothing as to how they came into possession of it. If they had

always used abstraction or substraction in the sense of ἀφαίρεσις or "taking away," or still better in the sense of dropping some portion of a name, whether singular or general, or letting it drop, and if all names thus affected had been called abstract or remainders (subtract), there would have been much less ambiguity in that term than there is now. We might well say then that all our words were formed by addition and substraction. By addition, when we collect several percepts under one concept, by substraction when we allow some of the contents of our concepts to drop out again. Concrete words would thus be names of a single thing as a whole, abstract words names of portions only, by whatever process these portions had been separated from the whole. It would then be seen at once that all names of attributes must by necessity be abstract, all names of substantial things concrete.

Thus house, like every other noun, contains in itself a predicate, and probably meant at first "whatever covers," "a covering." This I call a general and abstract term, and there is nothing single and concrete which could be said to be a covering and nothing else. But when I say "this house" or "my house," I change the general and abstract into a singular and concrete term. I mean this one house with all that pertains to it. After that, in order to arrive at the general idea of house, I have not by a laborious process to leave out all that is peculiar to the house, its color, its height, its door and windows. All this is really done for me. As soon as I have to speak of two or more houses, the singular and concrete name becomes general and abstract once more, without any help from me. Something of the mean-

ing conveyed by "this house" is dropped as soon as I speak of "houses," and a name is left which corresponds no longer to anything singular and concrete, to anything that we can touch or move. "This house" or "my house" was red or white, tall or low, with so many doors and windows; it stands in this street, in this place, and nowhere else. It exists once, and once only. But as soon as I form a plural and speak of houses, of two or three or many, their color, their height, the number of their doors and windows, all is dropped as non-essential, and there remains only a general name applicable to many buildings, and an abstract name, abstract in the sense that a good deal of its varied original meaning has been dropped. We have nearly come back to the original general and abstract name, "house," which meant, "whatever covers," "a covering."

Or, let us suppose that we see a black man and a white man. I am now speaking of a later period in the history of thought, when we already are in possession of such names as man, black, white. "Man," as we saw, was originally a synthesis of "thinking" and "here," it expressed something general and abstract, rendered singular and concrete by the synthesis between thinking and here. With such words we are able to say "this black man," "this white man." But by saying "black man and white man," we ipso facto drop color out of the intension of man, and "man" is used pro tanto as abstract or subtract, and, at the same time, as a general name.

So we may go on applying the term man to more and more beings, to young and old, to small and tall, to deaf and dumb, till at last this term becomes so

abstract, so emptied of its intension or connotation, that it may be applied to any extent to any human being of the male sex. Even that distinction is surrendered at last when we speak of a wif-man, i. e. a woman, or of Jedermann, every man, in the sense of every person.

We thus see how the same word "man" can be applied as a singular and concrete term, when we simply denote one person as "this man," and as an abstract and general term, when we say "every man" or "all men," i. e. all who are men, all of whom I may predicate the essential attributes of man. In the former case "man" is as full of intension as it can hold, in the latter it is almost reduced to its first state of "whatever thinks."

Are Adjectives Abstract or Concrete Terms?

If we look at this question first from an historical point of view, we ought to remember that adjectives were formed originally like substantives. Like substantives, therefore, they were abstract and general terms, but they differed from other substantives, and began to form a class by themselves because they lent themselves to be used as predicates rather than as subjects. This, however, did not prevent their being used, with the definite article or some other pronoun, as singular and concrete terms also, as when we speak of "this black," meaning "this negro." Here what is grammatically an adjective, is logically no longer a predicate, but has become a subject, and grammatically a substantive.

The process is always the same. We begin by localizing or concretizing a concept, such as to beat, when we say "beat-here." If we take this as the name of an agent, we get a name for beater as a substantive, or for beating as an adjective; if we

take it as the name of an instrument, we get a name for stick; if we take it as the name of the result, we get a name for beaten, and this again may be used either as a substantive, for instance, a beaten track, or as an adjective, meaning originally "beaten," but taking in several languages the meaning of "black and blue." This adjective "blue," if applied to many blows or wounds, is a general and abstract term, but if applied to one wound, it may once more become singular and concrete, so that "this blue" may do service for "this wound."

If then an adjective, according to its origin, is general, for it can be applied to many, and abstract, because, to take the lowest view, it cannot be touched or moved, how is it that many philosophers, and particularly Mill, treat adjectives as concrete terms? It is because from adjectives new substantives are derived, as whiteness from white, and because, if whiteness is abstract, white, it is supposed, must be concrete. Let us see what is the real difference between such terms as white and whiteness.

Abstract Terms derived from Adjectives.

We observed before that from collective terms, which are general terms, conceived as singular (senes=senatus), there is an easy transition to a new class of terms to which the name of abstract is commonly restricted, names which express the quality or qualities common to all members comprehended under these collective terms.

Sometimes there is no outward distinction at all between collective terms and the abstract terms corresponding to them. Youth means a collection of young men, e. g. the youth of Oxford, and likewise what is common to them all, as when we say, "impelled by youth (youthfulness) they rushed forth!"

The same applies to the French jeunesse. Thus humanity with us means mankind, but it also means the quality of mankind, humanity (humanitas). The old English name for wood is treow-cyn, lit. tree-kind. In order to avoid ambiguity, however, language tries to distinguish between collective and abstract terms. Thus priesthood is used as a collective term only (so many priests), manhood chiefly as an abstract collective term, expressing the essential qualities of mankind.

A very common derivative in the Teutonic languages is ness in English, niss in German. Its origin is difficult. It seems to have been originally ess and iss, but it became most popular after it had taken the initial n, due possibly to the last consonant of preceding verbal bases. It forms collective words as in wilderness, in German Wildniss, or in the German Finster-niss, darkness. More generally, however, it forms nouns expressive of quality, such as wildness, stinginess, etc. Often these abstract nouns assume new meanings. Thus fulness has been transferred once more so as to express a mass (πλῆθος), and business, from meaning the state or quality of being busy, has come to mean the object of business, or what we are occupied with. Nay, highness in Your Highness has become a mere title.

It would seem, therefore, if we follow the indications left in language, that there was a possible transition from collective to abstract terms.

From a purely psychological point of view, however, another explanation of these terms may be and has been attempted. If we see a black man, a black woman, a black child, a black dog, and a black cat,

it is possible that we may either allow black to drop throughout and thus arrive at a name applicable to man, woman, child, dog, and cat, namely animal; or we may allow man, woman, child, dog, and cat to drop, and thus retain black. But in that case, too, black is clearly an abstract term. It is not the name of things, but of something belonging to things, expressing a quality or an attribute that cannot be touched or moved. It can never be called a concrete name, till we join it with the article and thus get "this black," i. e. this black man.

I call this process psychologically possible, particularly in the case of students of logic, but I doubt whether with the great majority of mankind it is ever performed consciously. Language would rather seem to perform all this for us. The mere addition of adjectives, such as black dog, white dog, large dog, small dog, reduces the full meaning of "this dog" to a mere shadow, i. e. to a general, and, in our sense, an abstract term. We may afterwards, as logicians, perform the same process consciously, but the number of logicians is small.

The question which I should like to ask is this: — We know that, historically at all events, there was a transition from the collective term juventus, i. e. youth, in the sense of many or all young men, to the abstract term juventas, youth, in the sense of youthfulness, the quality peculiar to many or all young people. Is it not possible that there was a similar connecting link between white and whiteness, and that whiteness was really at first a kind of collective term for every kind of white, and became at last what we now call par excellence an abstract term? In that case language would have

passed, for instance, from dark to darkness, a collection of dark, and lastly to darkness, the quality of the former; or in German from wild to Wildniss, a collection of wild, a wilderness, and lastly to Wildniss, in the sense of Wildheit, the quality of all wild things. If this path was once opened, it would be followed by the mere force of analogy in many cases where the connecting links were never thought of. But it is the premier pas that has to be explained, and the explanation here suggested is not without analogy in certain other cases.[1]

Subtract and Abstract Terms.

In order to distinguish these abstract terms, as here defined, from general and abstract terms in the ordinary sense, I mean names like man, dog, and tree, it would be very desirable to have two terms. Some have suggested "abstract terms of the first and second degree," but this is cumbersome. I should myself prefer to call words like man, dog, and tree, subtract terms, because what they name has been separated and subtracted from a fuller mass of sensuous experience, while I should wish to reserve abstract for collective names of quality, such as whiteness, youth, etc. I fear, however, that custom is too strong, and that here as elsewhere loquendum cum vulgo.

Mill's Terminology.

It is well known that Mill in his "Logic" strongly objects to that definition of abstract and concrete which I have adopted, and still more to the identification of abstract with general, and concrete with singular.[2] "A practice," he writes, "has grown up in more modern times, which, if not introduced by Locke, has gained cur-

[1] See "On the suffix tâti," before, pp. 243–251.

[2] *Logic*, i. 2, 4; Jevons, pp. 20, 21.

rency chiefly from his example, of applying the expression "abstract name" to all names which are the result of abstraction or generalization, and consequently to all general names, instead of confining it to attributes. The metaphysicians of the Condillac school . . . have gone on imitating Locke in this abuse of language, until there is now some difficulty in restoring the word to its original signification." He finishes by saying, "By abstract then I shall always in Logic proper, mean the opposite of concrete; by an abstract name, the name of an attribute; by a concrete name, the name of an object."

Nothing can be more excellent so far as Mill's own terminology is concerned, but Locke and Condillac may surely claim the same right which he claims of defining the name concrete and abstract from their point of view. He appeals to the authority of the schoolmen, and calls any deviation from this terminology wanton. I admire the schoolmen as much as anybody, but if I take ἀφαίρεσις in the sense implied by Aristotle, or in a sense more in consonance with the history of language, of which the schoolmen knew nothing, I do not think that this can be called mere wantonness.

I am as much in favor of keeping old bottles as Mill can be, but it does happen from time to time that new facts will burst the old terms. Now the Science of Language has supplied us with many new facts, particularly with regard to the origin of words, and if it has taught us anything, it has taught us that two different words do not always imply two different concepts. I believe that with the simpler terminology which I have adopted, identifying sin-

gular and concrete, general and abstract names, I can still distinguish all that really requires distinction, without attempting to distinguish what ought not to be distinguished. I hold that as soon as I speak of trees in the plural, I use a general term, applicable to many, and an abstract or subtract term, because all that distinguishes one tree from another is gone. I also hold that as soon as I drop the peculiar foliage of this and that tree, whether leaves or needles, I arrive at a tree, a something which never exists and cannot exist in rerum naturâ, an abstract term therefore, if any deserves to be called abstract, and, as such, predicable of many, or a general term. Again, if we adopt the usual view of logicians, "this green tree," as soon as I drop everything but its color, leaves me in possession of the word "green," which is abstract, and, as applicable to ever so many trees, general.

I do not quarrel with Mill's definition of abstract and concrete, as different from general and singular, but even accepting his definition of these terms, I cannot reconcile them with his own statement, that an adjective, such as green, is concrete. What are adjectives but the names of quality, and if names of quality, according to Mill's own showing, are abstract, how can adjectives be concrete? Mill[1] admits himself that an attribute is not a real thing, possessed of objective existence, but a particular mode of naming our sensations, or our expectation of sensations, when looked at in their relation to an external object which excites them! If then that object is concrete, how does it differ from its attributes which are not, as Mill expresses it, real things? And yet

[1] *Logic*, ii. 2, 4.

in another place Mill writes: "Names of qualities and names of substances stand for the very same sets of facts or phenomena; whiteness and a white thing are only different phrases, required by convenience for speaking of the same external fact under different relations."[1] Surely that is not so in English. When I say "the snow possesses whiteness," I mean something very different from what I mean when I say "I see a white thing." By a "white thing"[2] I mean something capable of existing in and by itself, and not as a quality of some other thing, and Mill by identifying whiteness and a white thing seems to me guilty of the same petitio principii which he blames in Plato, who from the fact that justice and wisdom, though incorporeal, must be something, argues that incorporeal things may exist.[3] It may seem very disrespectful to speak in such terms of so great a logician as Mill, but I may honestly say I have tried very hard to reconcile his various utterances about adjectives or names of attributes being concrete names, but I have not succeeded. I hinted before that the reason why Mill and those who follow him treat adjectives such as red or useful as concrete, might have been that abstract terms can again be derived from them, such as redness and usefulness. But this would not be a sufficient reason. If I say "this red house," the three words together form no doubt a concrete term, and so would "the white house," "the tall house," "the square house," etc. But when I drop house, and speak of "red,"

[1] *Logic*, v. 3, 4.

[2] See Aristotle, *Post. Analyt.* xxii. 7: Ὅσα δὲ μὴ οὐσίαν σημαίνει, δεῖ κατά τινος ὑποκειμένου κατηγορεῖσθαι, καὶ μὴ εἶναί τι λευκὸν ὃ οὐχ ἕτερόν τι ὂν λευκόν ἐστιν.

[3] *Logic*, v. 7, 2.

"white," "tall," "square," these terms are abstract, whether we mean by abstract "drawn from" or "left behind." Red can never exist, and can never be perceived by itself; it comes to us always as belonging to other things, and only after allowing those other things to vanish from the focus of our mind can we think or speak of red.

But though red by itself can never stand as the name of a substance, it may perfectly well become the subject of a proposition, as when we say "the red of the rainbow," and speak of it as different from the blue and the green. Some people may say that by "the red" we mean the red color, but, if so, nothing can be more abstract than color, nor would color mean any more than our sensation of red objectified. It seems to me, that when we speak of the red of the rainbow, "the red" is here an abstract term used as a subject, and differs but little from "redness," which everybody admits to be an abstract term. In Latin album is used in the sense of whiteness, utile and dulce mean usefulness and pleasure. Even in modern languages we speak of the cool of the evening instead of the coolness, and there are adjectives which have no corresponding substantival forms at all, such as for instance, violet, purple, etc. Here it becomes quite clear that if we speak of the violet of the clouds, we mean not only what is violet in them, but the abstract quality of violet, what we should call violetness, if language allowed us to do so.

There is one more division of terms or names which has been revived by Mill, and which he considers of great importance, but which to me seems a mere encumbrance of Logic; I mean the division of

all names into Connotative and Denotative. This division too has been borrowed from the schoolmen, and I do not mean to deny that the two words, to connote and to denote, are often very useful in logical and etymological discussions. "A name is said, in the language of logicians, to denote the objects and connote the attributes. White denotes chalk and other white substances, and connotes the particular color which is common to them. Bird denotes eagles, sparrows, crows, geese, and so forth, and connotes life, the possession of wings, and the other properties by which we are guided in applying the name. The various objects denoted by the class-name are what is meant by the Extension of the concept, while the attributes connoted are its Comprehension or Intension."[1] All this is very true and clear. What I object to is the supposition that denotative is anything but a new name for singular and concrete terms. Even the point of view which we have to take in dividing names into connotative and denotative is not a new one. It is the same which we occupy when we distinguish between the intension and extension of terms.[2] Let us take an instance. The extension of such a word as planet consists of Jupiter, Venus, Saturn, etc., its intension is a round body revolving elliptically round the sun, etc. Is there any difference between this and our saying, the term planet denotes Jupiter or Venus or Saturn,[3] etc., and connotes a round body revolving

Connotative and Denotative Terms.

[1] *Mill on Hamilton*, p. 389.

[2] Thus the intension of a term is synonymous with its comprehension or connotation, or depth; while the extension is synonymous with the denotation or breadth. Jevons, *Lessons*, p. 39.

[3] I think we ought to say or, not and.

elliptically round the sun? Then why introduce new technical terms? It is convenient, no doubt, to have two expressions for the same thing, particularly as we have no verbs corresponding to extension and intension. But if that convenience is bought at the expense of clearness of thought, it is too dearly bought.

I go even a step further, and I maintain that, speaking strictly, all singular and concrete terms denote, all general and abstract terms connote. I do not mean to say that the meaning of these three names, singular, concrete, and denotative on one side, and general, abstract, and connotative on the other, is exactly the same, but I do mean that these names refer to the same classes of words under slightly different aspects. The same words fall into the one or the other class. For instance:

Singular: this planet, which exists once only, say Jupiter.

Concrete: this planet, which can be seen, if not touched and moved, say Jupiter.

Denotative: this planet, say Jupiter, and for the time being no other.

General: the planets, several in number, whatever moves round the sun elliptically.

Abstract:[1] the planets, in general, different from any planet in particular.

Connotative: the planets, qua bright, heavenly bodies, round, moving elliptically round the sun, attracted by gravitation, etc.

It has been pointed out by Jevons and other logi-

[1] If Mill says that abstract names are usually non-connotative, but may be connotative in some cases, this arises from the uncertainty of his definition of abstract. See Jevons, *Lessons*, p. 44.

cians that, in spite of its great length, Mill's definition of denotation and connotation, of non-connotative and connotative terms, is by no means clear, while Mill himself admits how much it differs from that accepted by his father, James Mill.

Without entering here into this controversy, I cannot suppress a wish that these two words, to denote and connote, might be set entirely free from their present logical bondage, so that they could be used for a new purpose by the student of language. It would be most desirable to be able to distinguish by short technical terms between the etymological and the historical meaning of words. I should like to be able to say that bhrâtar, brother, for instance, denotes one or more persons by the one attribute of carriers, on account of which attribute the name is given, while it connotes all the attributes which belong to a bhrâtar or carrier, as evolved gradually by experience, and in the end settled by definition. I should say on the same principle that triangle denotes a thing with three angles, and nothing else, but that it connotes being enclosed in three lines and all other qualities which geometrical research has discovered and may discover in a triangular figure. Planet again would be said to denote a wandering star, but to connote all that we know of planets. This comes very near to Mill's definition,[1] but that is the very reason why I fear that it would be misleading to use these terms in this new meaning. With Mill a non-connotative (denotative) term signifies a subject only, a connotative term denotes a subject and implies an attribute. I should prefer to say that a denotative term denotes a subject by means of one at-

[1] *Logic*, i. 2, 5.

tribute only, namely of that expressed by the root from which it is derived, a connotative term denotes a subject and implies all attributes that have been discovered by continued experience.

However, "to signify" answers nearly the same purpose as "to denote," "to imply" the same as "to connote," and where an ambiguity can arise, it may, for the present at least, be better to say bhrâtar signifies (or denotes) a person, qua carrier, and implies (or connotes) humanity, manhood, kinship, kindliness, etc.; that ἀδελφός signifies a co-uterinus, and that it implies, like bhrâtar, humanity, manhood, kinship, but perhaps less of kindliness and helpfulness than bhrâtar, a brother.

I should suggest then, with all respect for the minute distinctions introduced into the classification of words by schoolmen and by modern logicians, that the best classification is that which is supplied by the history of language. That history teaches us that language began with roots, expressive of the consciousness of repeated acts, or of concepts.

These concepts would be predicated, as follows: —

ROOTS OR CONCEPTS.

1. Substantives,
   a. Singular and Concrete,
      as subject: This cutter cuts.
      (as predicate: John is this cutter).
   b. General and Abstract,
      as subject: Cutters cut, a cutter cuts.
      (as predicate: John is a cutter).
   c. Collective, General as Singular,
      as subject: Some cutters, cutter-class.
   d. Universal,
      as subject: All cutters, cutter-kind.
2. Adjectives and Verbs,
   a. Singular and Concrete,

(as subject: This cutting one cuts).
as predicate: John is this cutting one, John cuts.

b. General and Abstract,
(as subject: cutting ones cut, a cutter cuts).
as predicate: John is a cutting one.

c. Collective, General as Singular,
as subject: The sharpness of weapons.

After having examined these various divisions of words which have been introduced by logicians, let us return now to the oldest division of all, a division which grammarians borrowed from logicians, namely that according to Aristotle's categories.

The Categories in Language.

I tried to show that what logicians call the categories, and what grammarians call the parts of speech, must be traced back to a far earlier period in the growth of the human mind than has hitherto been supposed. These categories are not only forms of language and thought, they are the antecedent conditions of language and therefore of thought. If we are to speak and think at all, we must be able to predicate substance and quality and action, and in this sense Kant was perfectly right in treating the categories as the sine qua non of all speech and all thought, and those of ubi and quando as the sine qua non of all sensuous intuition. Schopenhauer also was right when he claimed for causality the place of the fundamental category, for what he means by causality is really what Aristotle meant as the category of *οὐσία*. It is the impulse of causality which makes us demand for every perception a there, and this there, if we think about it, is really meant as thence, namely as the cause of our sensations. Where Schopenhauer seems to me wrong is in

denying to the other categories their fundamental character. No doubt, they would come genetically after the category of causality, and Aristotle himself calls them the δευτέραι κατηγορίαι, but they must be, to use Kant's language, given, quite as much as the first category, unless we look upon them as the result of repeated experience, that is, unless we forget Kant's first lesson, that no experience would have been possible without them. Without these categories man would indeed be ἄλογος, that is, not only speechless, but mad.

The only difference, if there is any, between Kant's view of the categories and my own is that Kant takes them as the sine qua non of thought in the abstract, while I take them as the sine qua non of thought, as embodied in language. And this will really serve to facilitate the proof of the a priori character of the categories. Kant has to show, for instance, that we could not conceive one, many, or all, if nothing were given us but the impressions of the senses, that the counting or summing up is our doing, and that no thought would be possible without it. I simply appeal to the evidence of language to show that no language is possible, unless we are able by some means or other to distinguish in it the subject of a sentence as either one, many, or all. It does not matter how it is done, whether by repetition, or by numerals, or by terminations of the singular and plural; but it must be done in some way, before we can call our utterance language.

The same applies to all categories. If Aristotle says that we must employ, first of all, the category of οὐσία, I say, we cannot think without substantives. If Aristotle says that we must employ the other cate-

gories (δευτέραι κατηγορίαι), I say we cannot think without adjectives, numerals, relative words, adverbs, and verbs, in their various applications. I appeal to facts, and for the purpose of proof, facts have their value, though, on the other hand, theory may be said to be more instructive than mere facts.

Roots used categorically.

By applying the ten categories to the conceptual roots, or by predicating roots in ten different ways, we gain the whole wealth of language. Whether with or without outward distinctions we gain —

(1) Substantives, e. g. from DHÎ, to mediate, Sk. dhî-s, meditating, place of meditation, prayer (instrument), praying (act), prayer (result).

From DÂ, to give, Sk. -dâ, or dâ-tar, giver, dâ-nam, gift, etc.

(2) Adjectives.

(a) quantitative, from DAK, to show, da*s*an, ten.

(b) qualitative, from *S*UBH, to shine, *s*ubhra, bright.

(c) relative, from MA*m*H, to be great, major, greater.

(3) Adverbs and cases.

(a) local, from VI*S*, to enter, vi*s*-i, in the village; from i, this, i-bi, here.

(b) temporal, from DIV, to shine, div-â, by day.

(4) Verbs.

(a) situs, from STÂ, to stand, ἔστην, I stood.

(b) habitus, from DÂ, to bind, ὑποδέδεται, he is shod.

(c) actio, from TAM, to cut, *τέμνει*, he cuts.
(d) passio, from TAM, to cut, *τέμνεται*, he is cut.

It should not be supposed that there is anything mysterious in the application of the ten categories to the roots. The origin of roots we have explained in the most simple and natural manner. Their modification by means of the categories is equally natural and simple. What we call categories are the only possible ways in which we can use our roots. They are necessities, they are, if you like, pure reason, and to reasonable beings they are not the most mysterious, but the most reasonable of all things. What could I do with the root Dig, if not to say that I dig? In doing this I use not one, but several categories. In the language of logicians I use the seventh category of *κεῖσθαι* (I am in a state of digging), and I use at the same time the first category of *οὐσία* (I, the agent), and the second category of *ποσόν* (I, as one, not as many). That sounds very learned, but it means no more than that I predicate digging of myself, and that I am one, not many. As soon as I add an object, as soon as I say I dig a field, I employ the ninth category of *ποιεῖν*, while, if I am being dug into, or, it may be, wounded by a spade, I naturally intend the tenth category of *πάσχειν*, in whatever way it may be expressed in different languages.

It stands to reason that not every root can lend itself to all categories. We could predicate the root Dig in the third category, *τὸ ποιόν*, if we had to declare that a certain tree was dug up or dug out, that is, hollowed out so as to be fit for a boat. But it would be difficult to use this root in the fourth category, *πρός τι*, or in the second, *τὸ ποσόν*, unless it had

first passed through the first category of *οὐσία*. The same applies to the fifth and sixth categories, the *ποῦ* and *ποτέ*, though such expressions as "in the place of digging," or "at the time of digging," might be formed directly from the root, provided that the root had first been raised to the dignity of a substantive or received the baptism of the first category.

Even this first product of multiplication of say a thousand roots with ten categories, would give us ten thousand words, and for carrying on the ordinary work of a primitive society we know that one thousand words would be ample. The first outgrowth.

But this is not all. We must bear in mind that after a root has once been raised to the dignity of a word by the application of one category, and generally by the addition of a suffix, that word, by the application of other categories, may be made to produce a number of new words.

A very important class consists of words formed by applying the first category to words of the second. This, as we saw, gives us names of quality, whiteness instead of white, goodness instead of good. A quality may be conceived as a subject, as the subject of a sentence, though it can never become a substance, in the ordinary sense of the word. It cannot be conceived to exist by itself. It is quite true that neither can substances be conceived to exist by themselves or without attributes. But there remains the distinction that attributes are predicated of substances, never substances of attributes. White may be used to signify that which makes a white thing white, but it always remains an attribute of something; and Categories applied to Words.

though we may predicate something of it, namely whiteness, or even different shades of whiteness, yet the white, even as a subject, can never become what we call a substance, a something substantial, an ὄν. White as an attribute is always an abstract name, while whiteness may be called an abstract name of the second degree.[1] If we predicate white of all white objects, we predicate whiteness of that which is supposed to make them white, i. e. of the light and color peculiar to them. We may again predicate of whiteness, for instance, that it is pleasant, just as we predicate of snow that it is white;[2] but here, though whiteness is the subject of a sentence, it has no right to be called a substance. Such names admit of the most varied application. They begin as names of qualities, and often end by becoming powers, or even gods and goddesses.

From amicus, friend, for instance, is formed amicitia, the quality of friends, but also the state of friends, the duty of friends, the sentiments of friends, lastly, the cause of that sentiment, the ideal, the goddess.

From purus, pure, we have purity, the quality and state of being pure, the sentiment, the fountain of that sentiment, and again some kind of ideal or goddess of purity.

Sometimes by applying the first category to words of the third we get collective words. Thus while juvenis, young, as a ποιόν, becomes juventus, the quality of being young, the plural of juvenis is raised to a collective noun, and juventus, youth,

[1] Schopenhauer, *Werke*, vol. ii. p. 49, compares terms such as man, horse, to the ground-floor; terms such as virtue, relation, to the first-floor of the house we live in.

[2] T. H. Green, *Works*, ii. p. 205.

comes to mean all youths, conceived as one class. These two words often run together both in form and meaning, and show by what process collective words may become abstract terms.[1]

Many adjectives are formed by applying the second category to the first. Thus from equus, horse, we form equinus, possessing the qualities of a horse; from homo, humanus, possessing the qualities of a man. From this we derive, as before, humanitas, either as a collective term, mankind, or as the hypostasis of all that constitutes man, humanity.

Even from a singular term, such as Peleus, may be formed an adjective Pelides, meaning originally connected with or descended from Peleus, and this may be used either as a singular, or, if applied to many, as a general term.

From Roma is formed Romanus, originally an adjective, but in course of time changed into a substantive.

The fourth category, of *πρός τι*, can be applied to every adjective, changing longus, for instance, into longior, etc.

Most nouns belonging to the first category can be used in the fifth and sixth categories, whether through declension, or by means of adverbial suffixes, Thus from coelum, sky, we have coeli, in the sky, from vesper, evening, vespere, in the evening, to which we may add, coelitus, from the sky, and even coelum, towards the sky. All adverbs which have now a causal or modal meaning were originally local and temporal. Thus *σόφως*, wisely, was originally "proceeding from what is wise," just as humanitus, humanely, meant originally coming from

[1] See before, pp. 459, 460.

what is human, like coelitus, coming from the sky. Δημοσίᾳ, publice, was in public, then publicly; ἰδίᾳ, in private, then without. Thus ὅπου means where and as; ἐπεί, after and because; quum, when and because; just as in English hence may mean because, and then therefore.

From adverbs also adjectives and substantives may be formed, as in Sanskrit from tatra, there, tatratyas, he who is there, Germ. dortig; from ni, in, ni-tyas, he who is within,[1] Germ. innig.

By applying the seventh, eighth, ninth, and tenth categories to nouns or adjectives, verbs can be derived in any quantity. From bronze we can form in the eighth category to bronze, i. e. to have assumed a bronze-like color; in the ninth category, to bronze, i. e. to produce such a color; in the tenth category, to be bronzed, i. e. to have received the same color.

Verbs, as is well known, are most prolific in substantives as well as adjectives. There are recognized forms, such as active and passive participles, for forming adjectives and substantives. Sapiens, as an adjective, is knowing, as a substantive, a sage: factum, as an adjective, is done, as a substantive, a fact. Caesum, as an adjective, is cut; as a derivative adjective, caesius means bluish, the color of a wound.[2]

Composition.

The number of words thus gained by the simple multiplication of roots by categories can be still further raised by composition, so that few wants of body or mind would remain unprovided for. Thus horse and man would give us quite a new concept, namely horseman, eques, a

[1] *Vedic Hymns*, i. 1, 166, 2, note.
[2] See *Hibbert Lectures*, p. 43.

rider. We get householder from household, i. e. what is held together as one house; housekeeper, from house and keeper, a steward, i. e. steward, a sty-guardian.

I shall only dwell here on one class of compounds, namely those formed by prepositions.

Prepositions.

By means of prepositions the meaning of verbs can be multiplied in the most surprising way, and if we consider that from every such compound verb a number of substantives, adjectives, and adverbs can again be derived, there seems to be no limit to the increase of the wealth of language. Thus, if we take so simple a root as BHAR, to bear, in Greek φέρ, we get:

ἀνα-φέρω, I lift, I bear, I refer back to some one; hence, ἀναφορεύς, wood placed across the shoulders for carrying water, etc.; ἀναφορά, reference.

ἀντι-φέρω, I carry towards, and ἀντι-φέρομαι, I measure myself against another.

ἀπο-φέρω, I carry away; hence ἀποφορά, tribute.

δια-φέρω, I carry over, I spread, I delay, I am away or different, I excel, etc.; δια-φέρομαί τινι, I differ with a person; πλεῖστον διαφέρει μοί τινος, lit. very much lies between me and it. Hence διαφορά, difference, quarrel, advantage; διάφορος, different, excellent; ἀδιάφορος, indifferent; ἀδιαφορία, indifferences.

εἰς-φέρω, I carry in, I contribute; hence εἰσφορά, tribute.

ἐκ-φέρω, I carry out, I publish, I produce; I bury; hence ἐκφορά, funeral; ἐκφόριον, the produce of the soil.

ἐμ-φέρομαι, τινί, I am like; hence ἐμφερής, like, ἐμφέρεια, likeness.

ἐπι-φέρω, I add; hence ἐπιφορά, addition, attack, syllogism; ἐπιφόρημα, dessert after dinner.

κατα-φέρω, I carry down; hence καταφορά, falling down, blow, deep sleep; κατάφορος, rushing down; καταφερής, sloping, prone.

μετα-φέρω, I carry somewhere else; hence μεταφορά, metaphor.

παρα-φέρω, I carry away, I pass by; hence παραφορά, madness.

περι-φέρω, I carry round, I make known, I endure, I come round, I recover; hence περιφέρεια, periphery, περιφορά, revolution of a wheel, vault of heaven.

προς-φέρω, I bring towards, I bring in, I benefit; hence προσφορά, offering, gift, food, income; πρόσφορος, useful, zuträglich; τὰ προσφερόμενα, food and drink.

προ-φέρω, I bring forth, I reproach, I further, I excel, I grow; hence προφορά, pronunciation, utterance, reproach; προφερής, excellent, advanced in years.

συμ-φέρω, I bring together, I add, I help; I bear in common with; hence σύμφορος, useful; συμφορά, accident, misfortune; συμφερόμενα, events.

ὑπερ-φέρω, I carry beyond, I excel; hence ὑπερφερής, excellent.

ὑπο-φέρω, I support, I reproach, I bring down; hence ὑποφορά, carrying off, purging, drain, excuse.

This is but one root out of many, nor have I given by any means the whole mass of words that can be traced back to it. But this one case will suffice to show with what small means language has contrived to produce all that is wanted to comprehend the whole universe of thought, and how much simplicity there is behind the apparent complexity of our vocabulary.

More important, however, than any of the contrivances for the increase of words which we have hitherto examined is the influence of what commonly

goes by the name of Metaphor. Metaphor, in our sense of the word, is to language what rain and sunshine are to the harvest. It multiplies each grain a hundred and a thousand fold. We must therefore try to understand clearly what we really mean by this ancient classical term. Metaphor.

I have treated of Metaphor very fully in my "Lectures on the Science of Language" (vol. ii. Lecture 8), but with more special reference to its influence on Mythology. I shall therefore confine myself here to some general remarks on the place which metaphor holds, among other processes, in the creation and formation of our words and thoughts.

Metaphor represents a whole stage of thought through which every language must pass, though its power and influence cannot be confined within strictly chronological limits, but will assert themselves again and again, when favorable circumstances arise.

When treating of Metaphor in my "Lectures on the Science of Language," I endeavored to establish a distinction between two classes of metaphors, which I called radical and poetical. I meant by a radical metaphor the transference of one and the same root to different objects, as when in Sanskrit both the sun and a hymn of praise are called arká, from a root *ÆRK*, to shine, the one in the sense of what shines, the other in the sense of what makes shine, or what blazes forth the glory of a god. When from the root VÆR, to cover, the Hindus derived Var-una (Οὐρανός), the covering sky and the god of the sky, and likewise Vri-tra (Ὄρθρος), the covering darkness, the cloud, the enemy of the bright gods; when from a root PRÂ, meaning originally to blow, to let forth, was derived πρεστήρ, a storm, but also πρήθω,

to burn; or from a root AN, to blow, the Sanskrit anala, fire, and anila, wind: all this was what I meant by radical metaphor. Perhaps the name was not well chosen, because it is rather a process of diaphora, of carrying the root with its concept to this and that object, than a metaphora, or transference from one object to another; yet, for practical purposes, metaphora, applied in this sense, can hardly be misunderstood, and, as guarded by a proper definition, it might well be kept.

But at all events this process is different, and ought to be distinguished from another, namely, the transference of ready-made words from one well-known object to another equally well-known object, as when poets call the rays of the sun arrows, large waves white horses (cavalli), small waves moutons, Italian pecorelle, or when, as in French, the sky covered with thin white clouds is called ciel moutonné, and Virgil says Lanae vellera per coelum feruntur. Such metaphors I wished to distinguish as poetical, and for a proper study of comparative mythology the distinction seems to me of considerable importance.

Dr. Brinkmann, in a work of great learning and research, entirely devoted to the subject of metaphor,[1] has found fault with this division; but, so far as I can judge, from a misapprehension of the meaning which I attached to these names of radical and poetical metaphor. He says (p. 43) that I ought to have divided all metaphors into radical and non-radical, and into poetical and prosaic. This dichotomous process may be right from a logical point of view, but it would

[1] *Die Metaphern, Studien über den Geist der modernen Sprachen*, 1. Buch, *Die Thierbilder der Sprache*, Bonn, 1878.

hardly have answered my purpose. I did not take poetical in the sense of metrical, and therefore could not have used prosaic as the complement of poetical. My object was an historical division, and if I had cared for apparent logical accuracy rather than for clearness of expression, I might have divided metaphors into radical and verbal. By radical metaphors, as I explained, I mean those which determined the application of certain roots to objects apparently so different as sun and hymn of praise, wind and fire, etc. The metaphor in this case affected the root; and it was not only difficult, but impossible, to say in each case whether roots, after having attained a general meaning, had been specialized, or whether a root of special meaning had been generalized, while being applied to the expression of various concepts. If, instead of calling all the remaining metaphors verbal, I preferred to call them poetical, it was partly because verbal is now chiefly used in opposition to nominal, partly because I wanted to imply that these metaphors constituted preëminently the innate poetry of language. These metaphors, the unconscious poetry of language, were originally as much an act of poetical genius performed by a forgotten poet as was any metaphorical expression of Shakespeare or Goethe. But from our point of view there is a difference, and a very important difference, between a metaphor that has been so completely absorbed into the blood of a language as no longer to be felt as a metaphor, and others which we use with a conscious feeling that they are our own work or the work of some one else, and that they require a kind of excuse, or even an interpretation. Aristotle (Poet. c. 21) calls such metaphors artificial (πεποιημένα), as when some poets

call the horns "small branches" (ἔρυγες), or a priest "one who prays" (ἀρητῆρ). It is the same term which he uses of artificial words, which we call onomatopoeic.

I confined my observations chiefly to a consideration of metaphors which have become part and parcel of a language, what Dr. Brinkmann would call incarnate metaphors, such as when the central spot of the eye is called the pupil, the little girl, in Spanish, la niña de los ojos; or when a machine for battering is called a battering-ram (aries); or another for lifting is called a crane. Such metaphors are very numerous. Thus the name of donkey, in German, Esel, is used in English as the name of a support for pictures (easel). In Spanish la borrica del hato, "the she-donkey of a bundle of clothes," is used to signify a shepherd's wallet. In Greek donkey (ὄνος) is used for windlass, the upper millstone, and a distaff. When the Aryans had discovered that the soil, after having been raked up, proved more fertile, and when they had contrived some crude kind of plough, the essential part of which consisted in a piece of wood, stone, or metal that tore open the soil, how were they to call it? Such words as the Sanskrit go-dara*n*a, earth-cleaver, are late. Ancient languages were shorter and less analytical. Having watched the propensity of pigs to scratch the soil with their noses, some of the Aryans called the plough the pig, the ploughshare the pig's snout. Thus Pâ*n*ini tells us (iii, 2, 182) that potram in Sanskrit meant both a pig and a plough; Halâyudha states that protham is the name of the snouts both of the plough and of a pig. Plutarch goes a step further, and asserts that the

first idea of a plough came from watching the pig burrowing, and that hence the ploughshare was called the ὗνις. The French soc also, the sock or share, has been identified with the Cymric hwch, the Cornish hoch, meaning pig, snout, and plough.[1] It is curious that the Latin porca, a ridge between two furrows, is derived from porcus; and that the German Furche (furicha) furrow, is connected with farah, boar. In Sanskrit we find vṛ*i*ka, the name for wolf, used in the sense of plough; but this may be due to a radical metaphor, vṛ*i*ka being derived from vraśk, to tear.

In many languages the living principle within us is called spirit (breath); to die is expressed by to wither, to scheme by to spin, a doubt by a knot, kind by warm, unkind by cold, etc.

All this I call poetical metaphor, and it interested me as being a most important element in the growth of language and mythology. What we generally call metaphors, and what Dr. Brinkmann is chiefly concerned with, are no doubt poetical too, and perhaps, if poetical means what is done by professed poets, even more truly poetical than what I call so. But they belong to a later stratum of language and thought. If I call a man a lion, in the sense of dandy; or a dog, in the sense of a wretch, these are incarnate metaphors, and their study belongs to the science of language. But if I say "he was like a lion in fight," or "he was a lion in fight," if I call him "Cœur de lion" these are individual metaphors, and their study belongs to rhetoric. It may sometimes be difficult to draw a sharp line between the two, but that is due to the very nature of metaphors. Though all origi-

[1] O. Schrader, *Sprachvergleichung*, p. 365.

nally the work of individuals, their acceptance and popularity depend on the taste of others; and it is often, therefore, a mere question of time whether they become incorporated in the spoken language or remain outside. Frequently a modern poet does but revive the latent metaphors of language, or furbish them up till they show once more their original intentions. If we say "to plough the sea," in French, sillonner la mer, in Italian, solcare il mare, in Spanish, arar la mar, in Latin, perarare aquas, sulcare vada carina, we only repeat the old radical metaphor which gave to the root AR the meanings of stirring, ploughing, and rowing.[1] Frequently a modern metaphor fades and hardens so quickly that we forget that it ever was a metaphor. Who thinks of a steel-pen as a feather, or of shares, when they rise and fall, as portions of capital? Yet these are metaphors of very modern date.

But though for the purposes which I had so chiefly in view when treating of the origin of mythology, the division of metaphors into radical and poetical, as explained by myself, seemed most convenient, a more detailed classification of metaphors may be useful for studying some deeper and wider strata in the growth of human thought and language.

The oldest division of metaphors dates from the time of Aristotle.

He (Poetica, cap. 21) takes μεταφορά in a very wide sense, calling by that name every transference of a word, 1st, from the genus to the species, as if we say, "to stand" of a ship, instead of "being at anchor;" 2d, from the species to the genus, if we say a "thousand," instead of "many;" 3d, from

[1] *Lectures on the Science of Language*, vol. i. p. 296.

one species to another species, if we say χαλκῷ ἀπὸ ψυχὴν ἀρύσας, "with the weapon lifting the soul as water with a pitcher from the well," or τεμὼν ἀτειρέϊ χαλκῷ, "cutting with the unyielding weapon," for in both cases the special ἀρύειν and τέμνειν are used in the sense of taking away; and 4th, according to analogy. Aristotle gives here as an instance "the goblet of Ares:" and he adds, "as the goblet stands to Dionysos in the same relation as the shield to Ares, the former is used for the latter." Another instance is, if we call the evening the old age of the day, or old age the evening of life. It was this last transference, however, that, "according to analogy," which in later times monopolized the name of metaphora, — Berkeley (vol. i. p. 390) uses analogy as synonymous with metaphor, — while tropus was used in the more general sense which Aristotle had assigned to metaphora. Thus Quintilian (Instit. Orat. viii. 6), rendering metaphora by translatio, explains it by brevior similitudo, an abridged comparison; and this has remained for centuries the recognized definition of the term. By similitudo Quintilian means such expressions as when we say that a man acted like a lion, by metaphora when we say more briefly the man is a lion. In addition to these he admits two other kinds of trope, viz, the synecdoche and metonymy. When we are meant to understand the many from the one, the whole from the part, the genus from the species, the result from the antecedents, and vice versâ, that with him is synecdoche; when we put one name for another, such as Homer for Homer's poems, that is metonymy.

This classification has answered its object very

well, particularly as it was intended chiefly for rhetorical purposes. But as we acquire a fuller understanding of certain processes of the mind and language, it often happens that the old classifications and the old technical terms prove inadequate, and that we have nevertheless to retain them, though in a modified sense. Thus the name of metaphor is certainly objectionable, except when we restrict it to individual poetical metaphors, because it seems to imply a conscious transference of a name from one object to another, both previously known, both previously named. Such transference takes place both in modern and ancient writers, as when, for instance, Gibbon says, "Some seeds of knowledge might be cast upon a fruitful soil!" Such a metaphor is poetical and intentional. This is already less so in a passage quoted by Aristotle in his Poetica (cap. 21), when the sun is spoken of as σπείρων θεοκτίσταν φλόγα, "sowing the divine light!" For, as Aristotle hints himself, the metaphor here is not quite involuntary, because the Greek language had no separate verb to express the act of strewing or scattering the light, and nothing remained but to use σπείρειν, to sow.

This is a very important remark, and a closer examination of ancient metaphors teaches us that poverty of language was a very important, nay, the most important element in their formation. Language had need of metaphors, had in fact to borrow, because it was too poor, or, as Cicero says (De Orat. iii. 38, 39), "hae translations quasi mutuationes sunt, cum quod non habeas, aliunde sumas." He distinguishes these metaphors from others, which he calls "paulo audaciores, quae

non inopiam indicant, sed orationi splendoris aliquid arcessunt."

When there was no word to express a nascent idea, what could be done but to take the next best? Man was driven to speak metaphorically, whether he liked it or not. It was not because he could not restrain his poetical imagination, but rather because he had to strain it to the very utmost, in order to find expression for the ever-increasing wants of his mind. Suppose man had advanced as far as platting or weaving; it would be very natural that, after setting lines to catch birds, he should, when he had to describe his day's work, be reminded of the words for platting or weaving. Weaving would thus take the sense of putting snares, and when a new word was wanted for setting snares — that is, for tricking, cheating, luring, inveigling a person by false words — nothing, again, would have been more natural than to take a word of a similar import, and to use, for instance, ὑφαίνειν, to weave, in the sense of plotting. Thus Homer says, πυκινὸν δόλον ὑφαίνειν, μῆτιν ὑφαίνειν, etc., i. e. to weave a plot. This metaphor spread very widely, and we may discover it likewise in Sk. várpas, a scheme, as compared with Lith. werpù, to spin, in French trame, from Lat. trama, weft, and even in our own word subtle, Lat. subtilis, which comes from subtexere, to weave beneath, like têla for texla.

Metaphor, therefore, ought no longer to be understood as simply the premeditated act of a poet, as a conscious transference of a word from one object to another. This is modern, fanciful, individual metaphor, while the old metaphor was much more frequently a matter of necessity, and in most cases not

so much the transference of a word from one concept to another, as the creation or determination of a new concept by means of an old name. A poet who transfers the name of tear to the dew has already clear names and concepts both for tear and dew. But the old framers of language who for the first time used "to weave" in the sense of plotting had before this neither concept nor name for plotting; they created or fixed the new concept and widened the old name at one and the same time.

But though it would be more correct to call ancient metaphors transformations or transitions rather than transferences, it will be necessary to retain the old technical term, only guarding against its etymological meaning being taken for its real definition. After these preliminary remarks, a classification of ancient metaphors will become less difficult.

Fundamental Metaphor.

There is first of all a whole class of metaphors, which I discussed before, and which, as I tried to show, arise from a deep necessity of thought. Of these I have often spoken, and need not dwell on them now, particularly as they have lately been discussed with great philosophical insight by Professor Noiré in his "Logos," pp. 258 seq. There was really no way of conceiving or naming anything objective except after the similitude of the subjective, or of ourselves. Not only animals must be conceived as acting like ourselves, as pointing, retrieving, rejoicing, grieving, willing, or resisting, but all inanimate objects had to be interpreted in the same way. The sun rises and sets, the moon grows and wanes, the clouds fly, the river runs, the mountains stand, the trees die, the sea smiles. Homer calls even a lance furious (*μαιμώωσα*), and a stone shameless (*ἀναιδής*).

This fundamental metaphor, however, dates back so far in the growth of our thoughts and words that it is hardly ever felt as a metaphor. It is at the root of all mythology, and had been perceived as such long ago, before the science of comparative mythology was even dreamt of. Thus Reid[1] wrote:— "Our first thoughts seem to be that the objects in which we perceive motion have understanding and power as we have. 'Savages,' says the Abbé Raynal, 'wherever they see motion which they cannot account for, there they suppose a soul.' All men may be considered as savages in this respect, until they are capable of instruction and using their faculties in a more perfect manner than savages do. The Abbé Raynal's observation is sufficiently confirmed both from fact and from the structure of all languages. Ruder nations do really believe sun, moon, and stars, earth, sea, and air, fountains and lakes, to have understanding and active power. To pay homage to them, and implore their favor, is a kind of idolatry natural to savages. All languages carry in their structure the marks of their being formed when this belief prevailed." With certain limitations this is quite true, but mythology is but one out of many manifestations in which that fundamental metaphor shows itself.

Grammatical Metaphor.

There is a second class of metaphors, arising, it would seem, from an imperfection of grammar rather than from any necessity of thought, though on closer examination we should probably find that here, too, language and thought are inseparable. The fact is that certain derivative

[1] *Essays on the Active Powers,* Essay iv. c. 3, as quoted by Mill, *Logic,* iii. 5, 2.

suffixes have more than one meaning; but this is due in the beginning to an ambiguity both of thought and expression, while afterwards this ambiguity, which was at first intended, became traditional and purely formal. Thus we find that in many languages agent and instrument are expressed by the same word, possibly because at first the instrument was conceived as a kind of agent, afterwards, however, from a mere habit. A borer may mean a man who bores or the instrument which bores. In Greek ἀορτήρ, lifter, applied to the horses which were not yoked to the carriage, was also applied to a strap; κρατήρ, originally a mixer, was used for a mixing vessel, became afterwards the name of any cup-shaped hollow, and lastly the name of the crater of a volcano. Ἐνδυτήρ was used as the name of a garment (πέπλος) to be put on, just as we say in German ein Überzieher, a great-coat.

Act and result are constantly expressed by the same word, as we saw in perception and intuition, when used in the sense of what is perceived and seen. This has often become a mere matter of idiom, as when we now use relations for relatives, action for act, nationalities for peoples, even essences for extracts, entities for beings, nay, real existences for subjects.[1] Substantia, substance, originally the most abstract of abstract terms, has now become apparently so concrete that Dr. Whewell thought we ought not to speak of imponderable substances, but of imponderable agencies.[2]

Sometimes the name of the instrument is used

[1] Mill, *Logic*, i. 3, 2; i. 4, 1.

[2] Whewell, *Philosophy of Discovery*, p. 331; Mill, *Logic*, iii. 14, 6.

where the act is implied, as when we say brain, or φρένες, midrif, for thinking, heart for feeling. Sometimes the name of the instrument is made to convey the effect produced by it, as when the Greek word χαρακτήρ, an instrument for graving, is used for the mark produced by it, then for any mark, and lastly for the peculiar nature or character of a man.

The name of the place sometimes expresses the agents located in such places, as when we speak of the Court migrating, or the Porte issuing a firman, of Oxford presenting a petition, or of the Church holding a Council.

This subject has been most carefully worked out by Hindu grammarians when treating of the meaning of suffixes (verbal and nominal), and on the various meanings which they impart to roots. It may be doubted whether these cases fall properly under the head of metaphor, but if they do they have clearly become involuntary transitions of conception, facilitated by the ambiguities of suffixes rather than by any poetical effort, in the usual sense of the word.

Metaphor as the Result of Generalization and Abstraction.

We now proceed to the consideration of what is most commonly called metaphor. I explained this process formerly [1] as "a transference of a name from the object to which it properly belongs to other objects which strike the mind as in some way or other participating in the peculiarities of the first object." This definition has been accepted by Dr. Brinkmann and others, but a repeated consideration of the subject has led me to take a different view of the mental process which produced metaphor in the earliest stages of language and thought.

[1] *Lectures on the Science of Language*, ii. p. 385.

If the ruler of a country was called a gubernator, it was not, I believe, by a straight transference of the concept of steersman to that of a ruler of a state. That may be the process by which a poet speaks of a king as a steersman standing at the helm of a vessel tossed by storms. But a simpler process is that by which the mind, after having formed such a word as gubernator, steersman, drops one after another the minute points which constitute its intension or comprehension, and thereby retains only the more general concept of a ruler. That process is not necessarily conscious. It is not aphaeresis, or abstraction, in the usual sense of that word. No one at least, I believe, has ever caught himself in that process of plucking the feathers out of his concepts. It is rather an apoptôsis, a falling off, a moulting, or, as Hobbes would have called it,[1] a decay of sense, which leaves behind more and more vague, more and more abstract, more and more general ideas.

When that process had taken place, when gubernator in the language of sailors and others had dwindled down to a mere director, no actual transference was necessary. Gubernator had been so far emptied of its original contents, its intension had shrivelled up so much, that it was naturally applicable to ever so many persons, provided they acted a leading part in the management of any affairs.

If we speak of the moons of Jupiter, moon is no longer our measurer of time, but it has faded into a mere satellite, a companion of a planet. It has become a very general name, and, as such, it proved applicable to the satellites of Jupiter or of any other planet.

[1] Hume, *Treatise on Human Nature*, ed. Green and Grose, vol. i. p. 193.

A foot had originally a very full intension. It meant the member of a living body, made of flesh and bone and muscle, with five toes, and used for locomotion. It was meant for a human foot, and implied very soon a certain length. But many of its attributes not being attended to, foot became applicable to the locomotive organs of other animals, of quadrupeds, insects, birds, till at last it lost even the attribute of locomotion, retaining only the meaning of what we stand on, and thus was used as the foot of a table, or the foot of a mountain, signifying what is most lifeless and motionless.

And here again we see very clearly how language and thought march hand in hand. It was not that man did not know by what is called sensuous knowledge the foot of a table, or the foot of a mountain before he gave it a name. The carpenter who made the foot knew it as a piece of wood, as a stick, as properly shaped, whether square or round. But until he conceived it as something supporting the top of a table, as a foot supports the body, he did not know it as a foot, and it is impossible to say which came first, concept or name, in what must have been an almost simultaneous process.

A poet, no doubt, might dispense with this slow process of Aphaeresis or Apoptôsis; he might not wait for the gradual dropping off of claws and wings and feathers before he called the sun a golden bird. But with the majority of mankind metaphor is produced by the gradual fading of the colors of our percepts, and even by the vanishing of the outlines of their shadows, i. e. of our concepts. This gives us abstract, hence general names, and these general names, without any metaphorical effort, be-

come applicable to a large number of new objects, and are afterwards called metaphors.

How quickly language, even in modern times, can generalize, we see in a number of idiomatic and proverbial expressions in which one single case is used to convey wide inferences and very general lessons. The Spanish language is particularly rich in such proverbs and metaphors, and they have been carefully collected by Spanish scholars. The Dictionary of the Spanish Academy (Madrid, 1726–39) is well known for its wealth of metaphorical expressions, most of which are carefully and successfully explained. The number of Spanish proverbs is said to amount to no less than twenty-four thousand.[1] Instead of saying, "What service have you rendered me?" the Spaniard says, Qué hijo me has sacado de pila? "Which son have you taken for me from the font?" Instead of saying Why? he may say, Por qué carga de agua? "For what load of water?" When we say, "Tell this story to another person," he says, "A otro perro con eso hueso," "Go to another dog with that bone." The Spanish language abounds in similar expressions which in one sense may all be called metaphorical, because they are all based on rapid generalizations of single cases. But English also, particularly if we explore its dialects, abounds in metaphorical proverbs. In Shropshire, instead of saying "Something

[1] A very full account of the literature on Spanish proverbs and on proverbs in general is to be found in Dr. Haller's great work, *Altspanische Sprichwörter aus den Zeiten vor Cervantes*, ins Deutsche übersetzt, in Spanischer und Deutscher Sprache erörtert und verglichen mit den entsprechenden der alten Griechen und Römer, der Lateiner der spätern Zeiten, der sämmtlichen germanischen und romanischen Völker, Regensburg, 1883, 2 vols. See also Brinkmann, *Die Metaphern*, p. 131.

has happened," the people say "The cat has kittened." For instance, "And so it happened as the landlord sent for him at once. Afore he went says he to me, 'The cat's kittened somewhere.' And so it turned out, for when he got to the Hall he found as they wanted him to stay on an' not leave the farm, and they offered to drop the rent a bit." [1]

In the same county, if a person appears in a new suit, people say, "Eh, what a tail our cat's got!" and if lovers who have quarrelled make it up again, it is called "to warm up cold broth."

In order to gain a clearer view of the nature of poetical metaphors and their wide influence on the growth of language and thought, I have endeavored to class them under the following heads: —

1. Transition from Man to Animal.
2. Transition from Animal to Man.
3. Transition from Material to Immaterial.
4. Transition from Immaterial to Material.
5. Transition from the Sign to what is Signified.
6. Transition from Cause to Effect.
7. Transition from Effect to Cause.
8. Transition from Part to Whole.
9. Transition from one to another of things generally associated.

To a great extent the metaphors of this class would have to be treated as the result of what I called "Fundamental Metaphor." It was impossible, as we saw, to conceive the acts of animals except as analogous with the acts of men. We interpret them from our point of view, and express them in our own language. Hence it is

1. Transition from Man to Animal.

[1] *Shropshire Shreds and Patches*, 9 Jan. 1884; *Shropshire Folk-lore*, by Ch. S. Burne, 1886, p. 596.

that dogs are not only conceived as hungry and thirsty, as watchful and revengeful, as we are, but that we do not hesitate to speak of them as considering, hesitating, guessing, reasoning, for all we know, syllogizing,[1] because language could not possibly supply new names to acts in all appearance so like our own, though it may be at the same time as different from them as will is from impulse. But we go further. We speak of hands instead of paws; we speak of the spectacles of a certain goose, of the coat of a dog instead of his fur. In fact the whole animal world has been conceived as a copy of our own. And not only the animal world, but the whole of nature, was liable to be conceived and named by an assimilation to human nature. When people saw a whirlpool in which the water turned and disappeared, they might call it a vort-ex, from verto, to turn. But they might also think of the jaws or the gullet, and thus call it gurges or vorago. Having applied gurges to a whirlpool, they would prefer another derivative, such as gurgulio or the simple gula, for gullet. But the root is the same, and strange as it seems, there is nothing onomatopoeic either in vorago or in gurgulio or in gargling. They all come from the root GAR, to swallow, which gives us girati and gilati in Sanskrit, vorare for gvorare in Latin, *βιβρώσκειν* in Greek. We then get intensive forms, such as *g*e-gil-yate in Sanskrit, *γέργερος*, gullet, *γαργαρίζειν*, to gargle, gurgulio, gullet, in Latin, and in O. H. G. querchela, gullet.

But if early language conceived animals in the likeness of man, it very soon conceived man in the

[1] Plato speaks of *τὸ πάθος αὐτοῦ τῆς φύσεως ἀγαθῶς φιλόσοφον.*

likeness of animals. There is hardly a name of an animal which, whether for good or for evil, has not been applied to man and woman. Dog, cur, hound, whelp, donkey, pig, mule, bear, sheep, goat, lion, tiger, cat, mouse, owl, wasp, all occur in ancient as well as in modern times as names of dislike or endearment. We are here speaking of those words only which have been absorbed so completely in the stream of language that their independent meaning is no longer perceptible. In adulari, to flatter, we hardly perceive the original meaning of wheedling,[1] nor in Wheedling, properly weedling, the German Wedeln, that of wagging the tail. In Fr. câlin, a wheedler, the derivation from caninus or catellinus, if correct, is almost forgotten.[2] Coward, It. codardo, Fr. couard, was originally applied to a dog or any other animal with his tail between his legs. Canaille in the sense of contemptible people exists in all the Romanic languages, It. canaglia, Sp. canalla, Port. canalha. Though donkey or ass, used in the sense of a stupid person, is a very ancient metaphor, yet it is one that has never quite lost its character of a simile. But when the Spaniards use desasnar in the sense of enlightening or showing a man how foolish he has been, we have here a metaphor that had almost ceased to be felt as such.

2. Transition from Animal to Man.

In the same manner few Germans when they speak of emsig, diligent, ant-like, think of the Ameise, the ant, i. e. the Emse, the emmet; nay, I see that the derivation is by some considered doubtful. Yet

[1] Nonius, p. 17: "Adulatio est blandimentum proprie canum, quod et ad hominem tractum consuetudine est."

[2] Brinkmann, l. c., p. 227.

no one doubts that caprice comes from capra, goat, and that capricious was originally meant for goat-like pranks.

The Latin ruminare meant properly to chew the cud, but it was applied so early to the act of mentally revolving a matter, that when we now speak of ruminating we but seldom recall the process in which cows eat their food.

The Greek ἀμέλγειν means to milk, originally to stroke. But when it is used in the sense of gaining, enjoying, the idea of milking is but faintly present. Similarly the Spanish word for milking, ordeñar, lit. to arrange, is afterwards used in the sense of drawing profit from anything (ir logrando poco á poco el fruto de alguna cosa). The German word taugen, to be good for something, may be connected with duh, to milk. Duh signifies not only to milk, but also to yield milk. A cow which gave milk (une vache qui rend) would have meant a useful cow, just as an animal which ceased to have young was called effetus, effete, useless. Duh, therefore, from meaning to yield milk, might well have come to be used in the general sense of being useful and efficient. The German Tugend would thus have as truly an agricultural origin as daughter, Sk. duhitar, if that word meant originally the milkmaid.[1]

All this shows how language, if at first it interpreted animal by man, soon reversed the process and interpreted man by animal, a phase of thought which not unlikely may have given birth to those numerous animal myths and animal fables, nay, to those curious

[1] See Grassmann, in Kuhn's *Zeitschrift*, xii. p. 126, where the Goth. dauh-t-s, feast, δοχή, is likewise traced back to duh.

animal epics which formed the delight of our distant ancestors and the remnants of which have survived to the present day.

3. Transition from Material to Immaterial.

The very general change from a material to an immaterial meaning has been so often dwelt on that I need here say no more than what is recognized by all students of language, namely, that every word, without a single exception, which has an immaterial meaning had originally a material meaning. Materialist and Idealist philosophers, Locke as well as Berkeley, are agreed on this point.[1] Still the process of dematerializing varies considerably. In the case of angel, which meant originally a human messenger, a real transference seems to have taken place, when a name had suddenly to be found for those spiritual messengers who were supposed to convey the commands of God to men. Here we may speak of a real transfer. But in the case of spirit, the process was different. Spirit was originally the visible breath, but it was soon taken as a merely outward sign of that which invariably ceased when breath ceased. It then came to mean life, and, by a further step, the living principle, the invisible spirit of man, and at last any spirit or spiritual being which was believed in without being seen. There was here no real transference. The concepts of life, the living principle, the invisible spirit of man, all these were not concepts, first formed and then named, but simultaneously with the enlargement of the concept of spirit, the name itself was enlarged. The birth of each new concept was synchronous with its baptism.

[1] See Locke, *Human Understanding*, iv. 3, 6; Berkeley, Third Dialogue between Hylas and Philonous, *Works*, i. p. 347; *Lectures on the Science of Language*, ii. p. 374.

It is difficult to select instances of metaphor leading from material to immaterial things, because language is really a complete herbarium of faded metaphors. We find them in the languages of uncivilized as well as civilized nations, only that in the former the material meaning may continue to be felt much more than in the latter. In New Guinea a man who pities you, says that he has a very bad stomach-ache for you,[1] and he no doubt means much more than we do when we speak of the bowels of compassion.

The Roman peasant preferred to say silva, forest, or cumulus, heap, instead of multitudo, and Latin has retained such phrases as beneficiorum cumulus, magna exemplorum silva.[2] Spicilegium, a gleaning of ears, was not used metaphorically in classical Latin, but it has become a favorite name for selections in later times.

Rustics spoke of rain and rivers as flowing and trickling forth (manare, emanare); soon the words were used by Roman orators in the sense of emanating from, as in Cic. De Or. i. 42, 189, hinc haec recentior Academia emanavit,[3] "hence arose this more recent Academy." Imbuere, in the language of the village, meant to moisten, in Rome it came to mean to infect, to imbue, to inspire.

As to adjectival metaphors, we speak of thrilling and stinging words, of a hard and a soft heart, a heavy and a light heart, a warm and a cold heart, a broken heart and a broken spirit, of black ingratitude, dark care, brilliant thoughts, golden times, nar-

[1] Rev. W. G. Lawes, *Motu Grammar*, 1885, Introduction, p. x.

[2] Brinkmann, l. c., p. 129; Reisig, *Lateinische Sprachwissenschaft*, § 173.

[3] Brinkmann, l. c., p. 76. Förstemann, "Zur Bedeutungslehre der deutschen Adverbien," in *Neues Jahrbuch der Berliner Gesellschaft für deutsche Sprache*, herausgegeben von v. d. Hagen, vol. vi. pp. 44–51.

row prejudices, iron will, dry remarks. As to verbal metaphors, we have such expressions as to damp the ardor, to chain the passions, to drown the cares, to feed on hopes, to thirst for knowledge, etc.

Even adverbs often rest on metaphors preceded by a fading of color. Thus aegre comes from aeger, sick, as hardly from hard. Temere, at random, is supposed to be a locative of a lost temus, corresponding to Sanskrit tamas, darkness, so that originally it would have meant "in the dark." Mox, soon, seems to correspond to Sk. makshu, with might. In Greek, δεινῶς is used in the sense of very, without that taint of vulgarity which still clings to our "awfully." The German ungefähr, about, meant originally "without danger." Vielleicht was very easily, Greek τάχα, perhaps. Schon, already, is supposed to have sprung from schön, beautifully, used in the sense of perfectly. A similar idiom is found in the Italian bello e buono, or in the English, "he is gone for good."

That all prepositions may change their local and temporal into a causal meaning has been often remarked, and may be seen explained in every Greek or Latin Grammar.

In most of the cases hitherto mentioned it would be impossible to describe the change of meaning as due to metaphor or transference in the ordinary sense of the word. The change takes place, whether we like it or not. The original meaning of words fades, their full intension becomes lessened, their extension in consequence grows larger and larger, and without any stretch of imagination the words thus changed come to express concepts which seem to have grown up simultaneously with this process of decay.

There are other cases where we see the name of one material thing used as the name of another, owing to some kind of similarity which it is not always easy to discover. Thus the French tête, head, is evidently the Latin testa, but testa in Latin meant a brick, an earthen pot, and a potsherd. In Spanish casco means potsherd and skull, and cogote, occiput, is said to be derived from concha, shell. In German we have the expression "ganz aus dem Häuschen sein," to be very much excited, almost off his head. In Spanish casilla, small house, is used for head, and socar á uno de sus casillas means to drive one out of his little house, i. e. to make him impatient. Humorously the head is called "la tapa de los sesos," the lid of the senses.[1]

4. Transition from Immaterial to Material.

It happens likewise, though of course less frequently, that names applied to immaterial objects are used again with a material meaning. Thus soul, after having become the name of the spiritual element in man, is employed in the sense of a human being, as when we say, "I did not see a single soul there." Ghost and spirit, after conveying the meaning of something invisible and intangible, are often used in the sense of apparitions that can be seen and even touched. Nothing can be more abstract than essentia, the essence of things, but it is boldly transferred to perfumes, extracted from flowers and other substances, and we even hear of essential oils. At first thought in its swiftness is compared to a horse, but as early as the Veda we read of horses quick as thought.

[1] Brinkmann, l. c., p. 135.

Another class of metaphors is not always distinguishable from the preceding one, because the sign is naturally in many cases the material outside of an immaterial inside. Thus spirit, as we saw, stood for the living, and even for the thinking principle in man. That may be called the material for the immaterial. But spirit or breath may also be considered as the outward sign of life or thought, and the metaphor would then belong to the fifth class. The same applies to such words as brain, heart, stomach, when used to signify thought, feeling, and passion; also to frons and supercilium, forehead and eyebrow, if used in the sense of boldness and pride. Other cases more clearly belonging to this class are when we say "the crown commands," meaning the "Queen." With respect to adjectives, when we speak of a mean as a dirty action, we use dirt as the outward sign of moral degradation. When we say "the trumpet calls," we really mean the command of the general as conveyed by the sound of the trumpet that calls the soldiers to battle. At last we may speak of the trumpet-call of duty.

5. Transition from the Sign to what is Signified.

Cases where the name of the cause, whether as author or as instrument, is used in place of the name of the effect, are frequent, as when we speak of reading Homer, instead of reading the poems made by Homer. This by some authorities would be classed as Metonymy. We have nearly the same kind of metaphor in the use which the Romans made of Ceres and Bacchus, in the sense of bread, wine. In Greek we found χαρακτήρ, the instrument for marking, used for the mark produced by it; in Latin lingua, tongue, has become the recognized name for language.

6. Transition from Cause to Effect.

7. Transition from Effect to Cause.

The next class is not very numerous. When we say that a man ought to blush, meaning that he ought to be ashamed, we use, no doubt, the effect for the cause; but blush may also have been taken as the outward sign, used in the sense of what is signified by it. "Give me a light," if used for "Give me a candle," may be another case in point, but these instances are perhaps hardly sufficient to form a class.

8. Transition from Part to Whole.

Another class, to which the Greeks gave the special name of Synecdoche, comprises such cases as when we use roof in the sense of house, bread for food, spring for year. Often the opposite takes place, as when people speak of a resolution passed by the senate, though it may have been passed by a few senators only, or by the majority of the senate; or when people speak of the church, meaning themselves only and those who agree with them. This, however, may rather be called an abuse of language or even an untruth than a metaphor.

9. Transition from one to another of things generally associated.

Metaphors by which the name of one thing is transferred to another which forms its complement or constant accompaniment are frequent in all languages. Thus scales stand for balance, the clouds for the sky, the altar for the temple. People say they have drunk a bottle, when they mean the wine in the bottle, and highwaymen asked for "la vie ou la bourse," when they cared very little about the purse, but a great deal about the money in it. Money, moneta, German münze, was so called because at Rome money was coined in a building on the Capitol, adjoining the temple of Juno Moneta.

After having discovered how little of real transference there is in what we call metaphorical expressions, it might become a question whether the old name should be retained, or whether it is so misleading that it ought to be abolished and replaced by a more accurate term. There are, no doubt, real metaphors, as when the sun is called the jewel of the sky, or the sea a garden of spray (un jardin de espumas), or England,

> "A precious stone set in the silver sea,
> Which serves it in the office of a wall,
> Or as a moat defensive to a house,
> Against the envy of less happier lands."

Some of these metaphors are far-fetched, while others are within easy reach, but all are fetched, and are well described therefore by metaphora. Most of the metaphors, however, which are of interest to the student of language and thought, as having entered into the living body of speech, as having become as Dr. Brinkmann expresses it, incarnate, owe their origin, as we saw, to such different causes that metaphor as applied to them has certainly become a misnomer. If, nevertheless, I continue to use metaphor as the technical name for all, it is with the distinct understanding that metaphor must not be supposed to imply a conscious transference of the name of one thing to another. "A fair and ingenuous reader," as Berkeley says,[1] "must collect the sense from the scope and tenor and connection of a discourse, making allowance for those inaccurate modes of speech which use has made inevitable." To imagine in the earliest periods of language a real transference of name from a known thing to an un-

[1] Berkeley, *Works*, i. p. 183.

known would be contrary to one of the leading principles of the Sciences of Thought and Language, namely, that nothing can be a thing to us without a name. The act of clothing naked concepts with old garments is an act of charity which we never perform. What really happens is that names vary in intension. Percepts do not hold all the sensations which originally composed them, concepts do not retain all the percepts which at first they were meant to embrace. There is therefore a constant change going on in the meaning of words, and our mind, if we but watch it carefully, is the permanent scene of the most surprising transformations. As the concepts lose their full intension — and this all concepts are apt to do by themselves and without any assistance derived from what we call abstraction — their names become larger, i. e. become applicable to new germinal concepts which are but waiting for a name to spring into life. When we once have the concept and name of a steersman, the concept of director springs into life as soon as steersman loses the attributes of standing at the helm of a ship and managing the rudder. The picture has faded, and by thus fading the weather-beaten steersman has become like many other people who are now, by likeness, κατὰ τὸ ἀνάλογαν, called steersmen, gubernatores or governors. In the highest sense, therefore, metaphor is but a new side of abstraction and generalization, the vital principles of all thought and of all language.

The principal task which the Science of Thought has to fulfil might thus seem to be accomplished. We have seen what Thought really is, and that in its full reality it exists nowhere but in Language.

This places all philosophy on a new basis, and on a basis that is not likely to be shaken again by the old arguments that as speech may be thoughtless, thought may be speechless, or that we think first, and then speak. That "thinking first" is nothing but silent language, a language which anybody can perceive, while he is writing a letter, without for one moment allowing himself to utter the words which his hand and his pen busily transfer to the paper before him. We may, if we like, distinguish the written from the spoken, the spoken from the thought word, but none of these is capable of separate existence, neither the written, nor the spoken, nor the thought word.

I know from experience how difficult it is to give up our belief in mere thought, and I shall not be surprised if such a surrender were considered as an abdication of the highest dignity of human nature. And yet there is in reality no surrender and no abdication; all that is wanted is that we should recognize the facts which we cannot seriously deny, and that we should always recollect that notio and nomen are two names of the same thing.

Still as there are men who can never speak any language beside their own, and as there are philosophers who can never understand any dialect beside the one in which they have been brought up, be it that of Hume or that of Kant, I am quite prepared to find that to some thinkers a system of philosophy based on the absolute identity of language and thought will forever remain a complete puzzle. They have brought themselves to believe in what they call mere words, and they cannot therefore give up their belief in mere thought.

And yet, with few exceptions, as we saw, all ear-

nest thinkers, all leading philosophers, whether they liked it or not, have had to confess that language and thought are inseparable, though few, if any, have seen what follows from that confession.

What really follows from it I have tried to show, namely, that language is the true autobiography of the human mind, and that all and every secret of philosophy is to be studied in the world-old diary of language. If we fully understood the whole growth of every word, philosophy would have and could have no longer any secrets. It would cease to exist. But although that point has not yet been reached, and will not be reached till several more generations of scholars and philosophers have toiled to reach it, some advance has already been made, and the results which the Science of Language has obtained may safely be utilized, as I have tried to show, for the Science of Thought.

If the general result of the Science of Language may be said to have been that language, which formerly seemed so wonderful a thing as to require a superhuman framer, is now seen to be a very intelligible and purely human piece of workmanship, the same result has been obtained in the Science of Thought. Thought, which seemed so marvellous, has become the most intelligible, the most simple piece of work. It is, in fact, no more than addition and subtraction, as Hobbes said, no more than perceiving, conceiving, and naming, as I have tried to show.

We asked for nothing to be granted us but the fact that men in their most primitive social state are conscious of the acts which they perform, and that they accompany these acts with certain more or

less musical sounds which in time serve to themselves and to others as signs of certain acts. It is not much to ask that MÆR should have been the sound accompanying the grinding of stones, VÂ the song of weavers, KHAN the shout of diggers. Out of such simple materials we saw how roots were framed, how roots were localized or predicated of this or that, how verbal and nominal bases were produced by composition of given elements, whether predicative or demonstrative; how the former were conjugated, the latter declined, till at last all that is now contained in our dictionaries and grammars was elaborated and finished, and nothing remained for poets and philosophers but to add and subtract again the treasures which they had either inherited or acquired in the sweat of their face. It was by adding repeated acts and holding them together in our consciousness that the first roots were formed, such as MÆR, to grind, VÂ, to weave. It was by subtracting or abstracting that the meaning of these roots became more and more generalized, so that to grind could come to mean to stroke down, to smoothe, to please, and to weave could be used in the sense of composing a poem or a song. It was by combining that plurals were formed, and collective names, and abstract names, in the usual sense of the word; it was by subtracting that a general term was predicated of a less general one. The process is always the same. We combine and we retain what we have combined. We subtract and we retain what we have subtracted. The results of our combination and subtraction supply the materials for new combinations and new subtractions, and thus ad infinitum from the first root to the last word, from the first percept to the

last concept. The very first word that was ever uttered was really a proposition, and the last poem of Browning is no more than a series of propositions. There is an uninterrupted continuity between the two, and however powerful the fancy of the poet, however subtle the reasoning of the philosopher, the materials which both have to use are the same, the words derived from roots and collected in the granary of our dictionaries. I do not say that an architect like Michel Angelo was no better than a stone-mason or a brick-maker, yet St. Peter's consists of nothing but stones and bricks, and possibly some cement which is again pulverized stone. Nor do I say that a play of Shakespeare is merely a dictionary well shaken together, but I do say that the materials with which it was built up were taken out of that treasury of words which has been accumulated during many thousands of years, and which contains no metal, no gold nor silver, except what is found in the 1000 roots of the Aryan language, and in the 121 primitive concepts of Aryan thought.

Here then I might put down my pen, having performed the promise which I gave in the beginning of my book. If I add another chapter, it is in order to show that a philosophy based on the identity of language and thought will stand any test that may be applied to it. I shall therefore in the next chapter treat very shortly of Propositions, the principal part of true Logic. Syllogisms, which are nothing but combinations of propositions, are of small interest in the natural growth of thought. They are useful as gymnastics, but on the real battle-field of thought they are unserviceable weapons.

CHAPTER IX.

PROPOSITIONS AND SYLLOGISMS.

In the first chapter of this work I pointed out the uselessness of what I called Nursery Psychology. A study of that psychology may be useful, however, for at least one purpose, namely to bring out clearly the difference between the growth of language and thought in ourselves, as children of the nineteenth century, and the growth of language and thought in the beginning of all things. It will teach us that to transfer the observations which we make in our nursery to the earliest period in the growth of the human mind would be like looking for bricks and stucco in the lowest strata of granite. It may be that the materials out of which brick and stucco are made go back to the earliest geological periods in the formation of the earth, but even then clay, baked by geological heat, is very different from terra cotta.

How children learn words.

If we watch the process by which children begin to speak and to think, we see that they begin at once with ready-made words, with what we call the most finished terra cotta. "Names with them are," as Professor Bain says, and from his point of view, quite rightly, "impressions of sense." One person is pointed out to a child as "Mother," another as "Father," a third as "Brother," and "Sister," and these names remain in the memory as among the

earliest and most lasting impressions. Every one of these terms is, as we know, thousands of years old, and has passed through a long history of its own. But to a child Mother is a mere sign, almost a proper name. "Mother has said so" implies at first no more than "Mary has said so." Gradually, however, with the growing experience of the child one attribute after another is slipt into the word, and thus what was at first a mere proper name becomes full of meaning, or, as logicians say, intension. It takes in one after another, both the visible attributes of a mother, referring to her dress, her eyes, her hair, and the invisible attributes, such as kindness, severity, and wisdom. Much later the more characteristic attributes of woman (mulier), wife (conjux), and mother (genitrix) are added, and only after all this congeries of attributes has been gathered under the name of mother does the work of definition and classification begin by which the few who think systematically assign to this and all other names their well-defined place in the universe of knowledge.

How names were first framed.

Now let us consider once more the process by which such a name as Brother was first framed. We can quite imagine a state of society in which the concept and name of brother did not yet exist, and we can infer from the various names of brother that they were not framed after a clear concept of brother had been gained, but at a haphazard, from some attribute or other which seemed important at the time to the members of a primitive society. Suppose that bhrâtar meant originally no more than one who helps to carry (from BHAR, to bear), an attribute, which to us seems extrinsic and non-essential, would then have

supplied the first germ of this name. From the very first, however, this name which meant carriers and helpers might be said to have implied every other attribute that was inseparable from these carriers. A bhrâtar or frater would have implied the outward appearance of a man, as distinguished from a woman; it would probably at first have implied a certain age also at which boys began to be helpful. The larger the number of attributes thus consciously included (the intension), the smaller would become the number of individuals to which the name was applicable (the extension). Sometimes one of these implied attributes might supply a new name. In a polyandrous state of society, for instance, particularly when questions of inheritance arose, it would become of importance to distinguish brothers of the same mother, though of different fathers. A brother of the same mother might be called bhrâtâ sa-garbha*h*, i. e. frater co-uterinus, ἀ-δελφός, and when φράτηρ drifted, as in Greek, into a more special social and political meaning, ἀδελφός would remain as the more useful name, though no longer confined either to children of the same mother, but of different fathers, or to children of different mothers, but of the same father.

This process is well described by T. H. Green, though for a different purpose. "If we say," he writes,[1] "that we know things first under a minimum of qualification and afterwards under more, we seem to contradict the fact that knowledge begins with experience of real objects which, as real, are qualified with infinite complexity." "Can you deny (it will be said) that it so begins with experience, or that objects of experience

Green, on the beginning of knowledge.

[1] *Works*, vol. ii. p. 193.

are thus real in the most concrete sense? We answer, it does so begin and the objects are thus real, but only in themselves; for the subject learning to know, they are so only potentially, not actually. For him the beginning of knowledge is merely 'there is something,' in other words, his first idea is of 'mere being;' this something gradually becomes further qualified, as, in virtue of that relation of the ego to the passing feeling which renders it 'something,' it is held in relation to other experience. Thus 'concrete' objects are gradually constituted by a process which is conjointly one of synthesis and analysis."

The earliest names must from the beginning have been appellative, not proper names, at least not in our sense of that word; their meaning must have been very small and their possible extension in consequence very wide, till new names came in to mutually limit and determine their intension, or definition was resorted to in order to exhaust once for all the whole contents of each name.

Difference between the two processes.

It must be clear how different these two processes are, the one by which a child accepts the word brother, ready made, a mere sign, to him almost a proper name, comprehending all that it has vaguely taken in as his brother, the other by which the early framers of language predicated a special act, say that of carrying and helping, of this or that person, and thus by their own mental effort came in possession of a name which was significant of one attribute, though it implied, more or less consciously, many other attributes possessed by the same persons to whom the attribute of carrying was ascribed. This shows that the difference between the strata of the earth and the stories of a

palace can hardly be greater than that between names formed for the first time by primitive men, and names imitated and stammered forth for the first time by our own children.

What applies to such a name as frater, applies to all names. All names contained originally a synthesis of a predicate with a subject, the subject being this or that, qualified by a predicate which in the first instance expresses an act, though very soon also a state or a suffering. Every noun contains a synthesis of hoc and illud, or, more correctly, of the first with the third category, of the οὐσία, substance, with the ποιόν, the quale. The difference between a noun and a verb, between "carrying he" and "he carries," was originally that in the noun frater, "carrying he," the subject was he, qualified by carrying, while in the verb fero, fers, fert, the act, as continuing in time, was the principal subject of thought and was predicated of me, thee, and him. Both substantives and verbs, however, were in the beginning complete sentences.

All nouns were originally synthetical.

It must not be supposed that this is a subject of interest to the etymologist only. Etymologies may be right or wrong, but nothing can affect the fact that every name expressed originally a subject, qualified by a predicate. This is very different from the process by which our best logicians suppose names to have been formed. They hold that in order to form a name we have first of all "to abstract attributes found in individual things, then to fix such attributes by a name, and lastly to take them as representative of individual things, which, as thus represented, form classes."[1] It is

Formation of Names.

[1] T. H. Green, *Works*, vol. ii. p. 167.

not enough, however, to state that this is done; what has to be explained is, how it is done. When we have a name, no doubt we can take it as representative of individual things, but we cannot take it, unless we have it, or rather unless we make it first.

Palaeontology of the human mind.

The true history of the human mind must therefore be read in the records of language. For studying the development of each individual mind the process by which each child adopts words and gradually fills them with their contents may be of interest, but for studying the development of the human mind from its first beginnings, we must go much further back, and try to discover by what process those words which we at present simply accept, were originally produced. This is the true palaeontology of the human mind, and this alone explains to us, not what might have taken place in the growth of our mind, but what actually took place.

Imperfect beginnings.

It may be said that the first step in the formation of names and concepts is very imperfect. So it is. To predicate "carrying" of this or that individual is a much more primitive process than to abstract an attribute. To name the act of carrying by a root formed from sounds which accompany the act of carrying a heavy load, is again a far more primitive act than to fix an attribute by a name, particularly by a name which has as yet no existence. But these imperfect primitive acts have within them a power of growth. Suppose bhrâtar was originally intended for one who carries and assists, and for no more; it would soon become necessary to limit the sphere of its application or to make it more definite in meaning; and this would be

achieved either by determining adjectives, or by the formation of similar words to which other kinds of carrying were assigned. Thus phor-eús, being used in the most general sense of a carrier, would leave phrá-ter to express the friendly carrier, while phôr, thief, would be the hostile carrier, he who carries away by violence. Another word phorós, meaning originally what carries, was used as an adjective (for all substantives were originally capable of being used as adjectives also), and thus an adjective was obtained, phorós, expressive of carrying, and impetuosity, but also of furthering, nay, of fertility.

Besides these names of the agent, the root PHER would yield us names of what may be called inanimate agents or instruments. Thus phéretron, originally anything that carries or with which we carry, took after a time the special meaning of a bier; pharétra, that of quiver; phor-mós, that of basket for carrying things. Dí-phros, also, a carriage, may have come from the same root.

As names of the result of carrying we find phórtos, phérma, and phórêma, a weight; phóros, tribute, i. e. what is carried to the king; phorâ, what is borne by a field, Ertrag; pherné, what is brought in by the wife, dos; lastly phertós, what is carried, what is tolerable, áphertos, what is intolerable.

The mere act of carrying, as implied by the root, is more fully expressed by such derivatives as phórêsis, or by phorâ, which means carrying, impetus, paying of tribute, bearing fruit, and, as a result, proceeds, tribute, etc.

The more names we examine, the stronger grows

our conviction that they are all formed on the same principle of a synthesis between a demonstrative element, this or that, here or there, which points to the subject, and a predicative element, i. e. a root. If I say all names, I do not except proper names, for all proper names were originally appellative,[1] though the loss of their original appellative meaning may at a later time render them more useful for the purpose of designating individuals.

Adjectives.

Adjectives, too, were originally appellatives, though restricted after a time to an attributive or predicative use. A wise man, "homo sapiens," was a man who is also a sage, homo juvenis, a man who is also a youth. In the Aryan languages an outward grammatical distinction between nouns and adjectives was felt to be useful, but it is by no means necessary, and there are many languages in which the distinction is left to collocation only, i. e. to that peculiar mode of predication which the speaker considers least ambiguous.

All adjectives were, as we saw, in the beginning substantives, but, being chiefly used as predicates, they soon formed a grammatical class by themselves. They might, however, be used in a sentence as subjects also, and in that case they became the first so-called abstract nouns. Thus "the snow is white" was originally meant for "the snow is the white one," or is something of which brilliancy has been predicated. When I say "the snow is white," white has become the name of an attribute, and predicates something abstract, something that in rerum naturâ cannot exist by itself. But I can again change the attribute white into a subject, and speak of "the

[1] Pott, *Personen-namen*, p. 1.

white of the snow," i. e. that unknown something which makes the snow to appear white, or causes in me the sensation of white. In the Aryan languages it is possible to distinguish by means of grammatical suffixes between "the white" or "the album" of white things, and "whiteness," "albedo." We saw that some logicians tried to distinguish between "the white," as it were "the coloring material" and "whiteness," the quality of that material. But when we speak of the white of the snow, we do not mean the coloring material, supposing there is such a thing, but simply whatever causes in us, when we see snow, the sensation of white, whether that be a refracting surface, or a vibration of ether, or anything else. "The good in man" is the same as "the goodness of man," only looked at from a different point of view.[1] It is only the ingrained feeling that two different words must have two different meanings which leads us to imagine that there is some sort of difference between the good in man and the goodness of man. I believe they are two expressions for one and the same thing, though I should look upon goodness as more collective than the good. But if some philosophers maintain that to them goodness is more abstract than the good, I have nothing to say against them; they must know their own minds best.

If I am right in holding that all attributes are abstract words,[2] verbs naturally fall into the same class

[1] If Mill says (*Logic*, iv. 3, 4) that "whiteness and a white thing are only different phrases," I object to the "thing" after "white." There is a difference between a white thing and that which makes a thing white.

[2] Mill holds that "an abstract name is the name of an attribute or combination of attributes, while the corresponding concrete is a name given to things because of, and in order to express, their possessing that attribute or that combination of attributes." *Logic*, i. 5, 7.

as adjectives. It makes little or no difference whether I say, Nix est alba, or nix albet, and it is well known that Aristotle speaks of τὸ λευκόν, the white, as a ῥῆμα, a verb, but of τὸ ἄνθρωπος as an ὄνομα, noun. A verb predicates an act, or a state, or a suffering of three persons, I, thou, he, in the singular and plural, and likewise of things, whether it or they. It forms a perfect sentence more clearly even than the noun. If the person or the thing of which an act is predicated is named by itself, we get really two sentences combined in one. "The brother carries," stands for "Carrying-here carry-he." No doubt this phase of thought has long been forgotten, and we now restrict the name of proposition (πρότασις) to a combination of two originally independent sentences, in which one term is either asserted or denied of the other term, and which therefore convey either a truth or an untruth, according as that combination is either correct or incorrect.

Verbs.

After we have clearly perceived the true character of names, such as it was, not such as it might have been, in the beginning, we shall now better be able to understand the true character of a proposition.

Propositions.

If, according to their true origin, names can be called the names of concepts only, never of things as apart from our concepts, it follows that propositions also, which consist of combinations of names, are concerned with concepts of things, not with things by themselves, whatever that may mean. A proposition is right or wrong, if it conveys the true relation between two names. Whether those names are right, that is to say, whether their intension has been properly defined and their extension properly limited, is a

question that has to be settled in quite a different Court.

Propositions and Judgments.

It might be useful, in order to avoid misunderstandings, to distinguish between propositions and judgments, reserving the latter name for statements of facts, supported by new observations, the former for predications of one name of another, according to their present definition.

Formal Logic, however, has, properly speaking, to deal with the mode of assent only, not with what is assented to. The definition of names is constantly changed, is narrowed or extended by new observations, but it is only after names have thus been defined that they become proper objects for propositions. When it was believed that there were only seven planets, the proposition "the planets are seven in number" was right. When it was found that the number of planets is greater than seven, the proposition "the planets are more than seven" was equally right. Nor do I see that we should gain much if we called the latter a judgment, the former a proposition. They are both propositions,[1] both right for the time being, and all that logic can teach us is that both propositions could not be right at the same time.

Synonyma and Polyonyma.

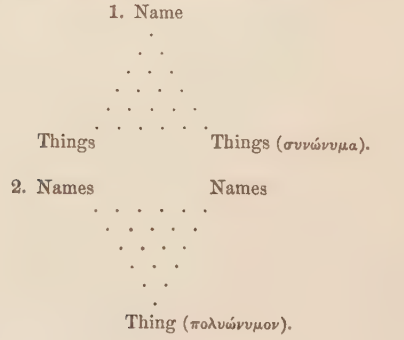
A name, as we saw, originated with a sound accompanying an act, and this sound was meant to express the consciousness of a repeated act, this consciousness being the same thing as a concept, embodied in a root. By predicating these conceptual roots of this or that, the earliest framers of our words and thoughts arrived at

[1] See, however, Mill, *Logic*, i. 5, 1, 2.

names denoting single objects by one attribute, but being applicable to an indefinite number of similar objects. By usage, however, by the creation of cognate words, or by the adoption of distinguishing attributes, the extension of these words could be more and more restricted and defined, until some of them became limited to the narrowest spheres, became in fact singular terms, and in some cases, proper names. Before names reached that last stage, language and thought would have to pass through various stages in which the same name, being vaguely connotative, might be applied to many widely different things, and in which different names, if sharing one part of their connotation in common, might be applied to one and the same thing.

Digger, for instance, might signify a man, a woman, or a child, nay, even an animal; and, under certain conditions, an instrument also, such as a spade, might be called digger.

On the other hand, names such as Digger, Cutter, Laborer, Servant, Male, Child, might all be meant for the same person, according to different acts, states, or qualities which we notice in him.



What then was the original purpose of a proposition, a sentence consisting at least of two words, of which one is predicated of the other? It was nothing but a repetition of that act of predication which in the first instance led to the formation of words. It meant to say, I have called x a, I now call the same x b. The true purpose in forming a name was, as we saw, to predicate a primitive concept, embodied in a root, of this or that thing. Our purpose in forming a proposition is to predicate two names of one and the same thing, signified by either name. In saying "this man digger," we predicate digger of this man, or we predicate both manhood and digging of one and the same person. Historically this is the only possible way in which propositions could be and were formed.

Purpose of Predication.

The subjects of propositions may be singular, dual, or plural according as we predicate digging of one man, of a couple of men, or of many men. The dual, however, has not always a separate form in grammar. A further step would lead us from many to all, at first by saying "all men we know are diggers," and, lastly, by stating that all who deserve the name of man deserve also the name of digger. I use the word deserve in order to show that the decision whether anything should have such a name or not, depends on the judgment of the original framers of names, or of their later critics. We can never take out of a name more than we have put into it.

Singular, Dual, Plural, and Universal Propositions.

This explains in a broad way the historical process by which men arrived at particular (including plural) and at universal (including singular and dual) propositions, and it explains at the same

time why the universal proposition which I quoted, "all men are diggers," is wrong. It would be right so long as we knew no men who were not diggers; but as soon as we came across a single man who had never dug, the proposition would be wrong, because we should know one person at least to whom the name of man was applicable, but not that of a digger, or, in other words, the sphere of man would be larger to us by one than the sphere of diggers. If, however, we say "all diggers are men," our proposition can never be contradicted by facts, provided we have made up our mind not to allow the name of digger to anything which does not deserve the name of man. Before we can say that all who deserve the name of digger deserve also the name of man, we have to define the exact denotation of man. If, for instance, man denoted all human beings, no being deserving the name of digger could fail to deserve the name of man. But if man denoted, as it often does, human beings of the male sex only, then we could no longer say that all diggers are men, because we know of women also who are diggers.

Classification by Gender.

Here language has often availed itself of the gender of nouns to make propositions more definite. Gender is originally genus, and its outward signs mark broad genera of things, and in the end the most useful genera only, those of masculine, feminine, and neuter. We must not imagine that gender was originally intended to mark sex only. That was the result of a much later differentiation. Gender came in by the introduction of a certain class of nouns in which names of women predominated. That made all nouns outside that class not feminine, i. e. masculine. The neuter

gender has no existence at all, except in the nominative and accusative. As soon then as a language has fixed three forms for "digger-he," "digger-she," "digger-it," our propositions become at once more narrow and more definite, and we may say "all digger-he < man-he," "all digger-she < man-she." We can also form propositions of "digger-it," i. e. spade, by saying "all digger-it < cutter-it," i. e. "omnia sarcula acuta" or "omnia sarcula caedunt."

Copula.

The so-called Copula on which so much has been written has nothing whatever to do with the nature of a proposition except when it conveys at the same time the modality, i. e. the actuality, possibility, or necessity of a judgment. Whether I say homines boni or homines sunt boni, my meaning is the same, namely homines = boni. All auxiliary verbs are merely the shadows of verbs which originally meant to grow, to dwell, to turn, to breathe,[1] and many languages are without them, though they are not without the power of expressing propositions. Hobbes (Leviathan, iv. 46) saw very clearly on this point, and no more need be said on it.

"Others," he writes, "serve to show the consequence or repugnance of one name to another; as when one saith, a man is a body, he intendeth that the name of body is necessarily consequent to the name of man; as being but several names of the same thing, man; which consequence is signified by coupling them together with the word is. And as we use the verb is, so the Latins use their verb est, and the Greeks their ἐστί through all its declensions. Whether all other nations of the world have in their

[1] M. M., *Hibbert Lectures*, p. 197, and before, p. 379.

several languages a word that answereth to it, or not, I cannot tell; but I am sure they have no need of it. For the placing of two names in order may serve to signify their consequence, if it were the custom (for custom is it that gives words their force), as well as the words is, or be, or are, and the like.

"And if it were so, that there were a language without any verb answerable to est, or is, or be, yet the men that used it would be not a jot the less capable of inferring, concluding, and of all kind of reasoning than were the Greeks and Latins."

Proposition as defined by Hobbes.

If now we compare this historical process of the formation of propositions with the description given of it by "one of the clearest and most consecutive thinkers whom this country or the world has produced" (these are Mill's words), we shall find that Hobbes, though utterly ignorant of the historical antecedents of language, agrees with us in the most remarkable manner. "In every proposition," he says, "what is signified is the belief of the speaker that the predicate is a name of the same thing of which the subject is the name; and if it really is so, the proposition is true."

Mill's criticism unjust.

Mill admits that this is "the only analysis of a proposition which is rigorously true of all propositions without exception." But he evidently has not seen the full bearing of it, still less its historical justification. He thinks it is entirely true of such propositions only as "Tully is Cicero," that is to say of predicates which have no connotation at all, but are what we call proper names. Now these are the very names which, as they connote nothing, are of the smallest interest in forming propositions. They may form the subject, but they can

never be the predicate of a true proposition, for in saying "This is Tully, this is Cicero," we do not really predicate, but we simply name.[1]

But why does Mill imagine that the explanation given by Hobbes is not applicable to any other propositions? He says, "A bird or a stone, or a man or a wise man, means simply an object having such and such attributes. The real meaning of the word man is those attributes, and not Smith, Brown, and the remainder of the individuals. The word mortal, in like manner, connotes a certain attribute or attributes, and when we say 'all men are mortal,' the meaning of the proposition is, that all beings which possess the one set of attributes possess also the other.[2] If, in our experience, the attributes connoted by man are always accompanied by the attribute connoted by mortal, it will follow as a consequence, that the class man will be wholly included in the class mortal, and that mortal will be a name of all things of which man is a name; but why? Those objects are brought under the name by possessing the attributes connoted by it: but their possession of the attributes is the real condition on which the truth of the proposition depends, not their being called by the name. Connotative names do not precede, but follow the attributes which they connote."

It is clear from this that Mill takes name as some-

[1] "With none but names of individuals (or, in other words, proper names) we might, by pronouncing the name, suggest the idea of the object, but we could not assert any proposition, except the unmeaning ones formed by predicating two proper names of one another." Mill, *Logic*, iv. 4, 3.

[2] Or, as Hobbes expresses it, that the new predicate is a name of the same thing of which the subject is the name.

thing given, not as something which has developed as a sign by which an indefinite number of individuals can be denoted. He even admits that "a class is absolutely nothing but such a general name."[1] But is a name given? It may be so with us, but what we want to know is how for the first time the human mind came to form a proposition. Neither name nor concept did then exist, and the way in which they were formed was to localize a root, and say, for instance, "Dig-here," i. e. Digger. This name became inevitably a general term, for even if first used of one man, it could likewise be used of others, it could form a dual or a plural. Now, if people wished to say that one digger or many diggers were old, perhaps they had as yet no name for old; or if they had, that name meant no more than "decay-here," i. e. a decaying one, a mortal. How then was the new proposition to be formed? Simply by making the predicate (decay-here) the name of the same thing of which digger was the name, by saying in fact, "dig-here = decay-here."

At a later time this process became, no doubt, abbreviated, by saying "fossor mortalis," or fossores moriuntur," but the original process can still be perceived even in the most modern propositions. We see everywhere that two names are used of the same subject, or, as we may also express it, that the same subject is called by two names and referred to two classes. When I say, "this man is wise," I predicate both manhood and wisdom of the same individual, and I cannot do this except after having framed two names. "Connotative names do not follow the attributes which they connote," as

[1] Logic, i. 5, 3.

Mill imagines: they are coincident with them, or may even anticipate them. The attributes do not exist, at least for us, except after having been conceived and named, and as to the full connotation, that of course is but slowly worked out. It follows the name, it cannot precede it. The connotation of man, for instance, suppose it meant originally the measurer or thinker, is not exhausted even now, because the full intension of the name has not yet been exhausted and defined, and though the name itself has been used for thousands of years, we cannot tell yet what man is, or all we mean by man. After names have been formed, their connotation and their definition are determined more and more accurately by slow experience, and so indirectly are our propositions. It is quite true, for instance, that such a proposition as "the diamond is combustible" was not thought of when the words "Diamond" and "Combustible" were first framed. Nor would it have been right to bring these two words together in a proposition at any time before the year or the day or the hour when the first experiment to burn a diamond had proved successful. But as soon as that experiment had succeeded, the indefinite extension of the word incombustible became narrowed, that of combustible became enlarged, and the intension of the word diamond became more complete. People were justified then in predicating Combustible of Diamond, or to predicate the name of Combustible of the same thing of which the name of Diamond had been predicated, just as we are justified in predicating either sage or fool of Sokrates the moment we have observed that he possesses or possessed those attributes which, when observed in other persons, we call wisdom or folly.

Synthetical and Analytical Propositions.

In order to arrive at a clear understanding of the nature of a proposition, we ought to see that particular and universal are really the same as synthetical and analytical judgments. If I say "some men are mortal," the proposition is purely synthetical, quite as much as if I say "some men are yellow." I simply assert the fact that, according to our experience, the names man and mortal, man and yellow, happen to be predicable of the same individuals. But as soon as I say "all men are mortal," or "man is mortal," I state not simply an experience, for all men can never form the subject of an experience, but I state that whatever deserves to be called man, deserves also to be called mortal; that a man would cease to be called a man, if he ceased to grow old, that growth and decay are the sine qua non of what we call manhood.

In other words, the truth of particular and synthetical propositions depends always on experience, the truth of a universal proposition depends either on analysis or on the knowledge of a cause, coupled in many cases with a belief in the uniformity of nature. If I say some men, few or many, are mortal, I assert nothing but my knowledge of a fact. My statement may be true or false, but in making it, I do nothing but assert its correctness, which can be proved or disproved by experience or by experiment. In universal propositions, on the contrary, if they are analytical, experience is no longer the immediate test of truth.

We saw that the statement that a diamond is incombustible was perfectly right till the experiment of burning a diamond had succeeded. After that it was right to form a synthetical proposition, this diamond is combustible, and after many such experi-

ments, many diamonds are combustible. If, however, on the strength of this, people went on to say, all diamonds are combustible, they acted on faith, on faith in what is called the uniformity of nature. Such faith is quite justified for all practical purposes, provided we always understand that it can only last till the contrary is proved.

But the same proposition, all diamonds are combustible, can also take another meaning, when I imply, not only that they will, but that they must prove combustible. And why? Because we have discovered something in the nature of a diamond which necessitates its liability to combustion, so much so that if we saw a diamond resisting all combustion, we should feel bound to say that it was not what we call a diamond, and ought, at all events for scientific purposes, to be called by another name.

It has often been stated by writers on Formal Logic that "all bodies are extended" is an analytical, "all bodies are heavy" a synthetical proposition. The former is analytical, because extension is part of the intension of the name body, or, as Mill would say, is always connoted by body. The other is synthetical so long as we mean no more than that all bodies we have ever come across have proved to be heavy. But if we are able to prove that there is something in the nature of a body which necessitates its liability to weight, our proposition would again become analytical, that is to say, we should feel obliged to invent a new name, instead of body, for something that proves to be imponderable.[1] "Imponderable body" would become as contradictory as "unextended

[1] Dr. Whewell proposed "imponderable agencies" instead of "imponderable substances." See Mill, *Logic*, iii. 14, 6.

body" or as "square circle." If heavy is the name given to something which, whether we hold it in our hands or place it in the scales of a balance, pulls toward the centre of gravity, then the proposition "all bodies are heavy" is as much universal, as much analytical as "all bodies are extended."

The question whether the proposition "all bodies are extended" possesses what Kant calls a priori certainty, does not concern us here. But it is important to observe that while Kant in his "Critique of Pure Reason" treated the proposition "all bodies are heavy" as derived from experience, he claims for it in his "Metaphysische Anfangsgründe der Naturwissenschaft" the same a priori certainty as for the proposition "all bodies are extended."

Tautological Propositions.

A better acquaintance with the antecedents of the words which we employ in making propositions would often show us how many of them are purely tautological. In Sanskrit one of the names for man is marta, which means mortal. In English, too, we can speak of mortals very much in the sense of men. If then we were to say "all mortals are mortal," instead of "all men are mortals," we should see at once that our proposition was not only analytical, but tautological, that we used not different names, but the same name both as subject and as predicate.

Much the same applies to such propositions as "All roses are rosy," or "All lilacs are lilac," only that after a time the meaning of the names rose or lilac may change so much that "rosiness" or "lilacness," instead of being a proprium, becomes a mere accident of roses and lilacs, in which case we must be content with a synthetical instead of an

analytical judgment. We may say, "Some roses are rosy," but language does no longer allow us to say "All roses are rosy."

This is of some importance for the formation of syllogisms also, as we see, if we tried to form the mood Darii, by

Tautological Syllogisms.

All mortals are mortal,
Cajus is a mortal,
Therefore Cajus is a mortal.

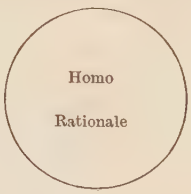
There is, no doubt, a difference in the genesis of analytical propositions, some being self-evident from the first, almost tautological, such as "all bodies are extended," others depending on the discovery of a reason why, as for instance, "all bodies are heavy." But in the eyes of Formal Logic they both stand on the same level, and they rest on the same principle, namely that we may or may not assent to use two words of the same thing. If in spite of the fact that all bodies are heavy, we go on to speak of imponderable bodies, we do it at our own risk, we stretch the connotation of body beyond its proper limits, till our names and concepts split, and in consequence do not hold water for the purpose of correct reasoning. But whatever view we take of these things, the definition of a proposition given by Hobbes will always turn out right, and in full agreement with the historical process by which, as we saw, the human mind arrived at the stage of propositions. Only we must not forget that a name is more than a sound and a sign, that it is something inseparable from our concepts, something without which no concept could exist. If we bear this in mind it will no longer sound so very wonderful that, as Hobbes

said, in every proposition the predicate is a name (i. e. concept) of the same thing of which the subject is a name (i. e. concept), or that in every proposition we bring the same thing under two names and concepts.

Euler's Figures

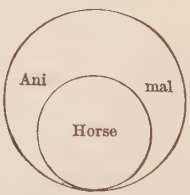
If we represent propositions by circles, according to the system invented by Euler,[1] we have only to substitute the extension of a name for that of the concept, or rather to combine the two in one, and everything will become perfectly clear.

(1) If we have to deal with two names, having exactly the same meaning, or, as logicians say, the same connotation and denotation, the same intension and extension, two circles exactly covering each other would represent such tautological propositions as:



"All men are rational."

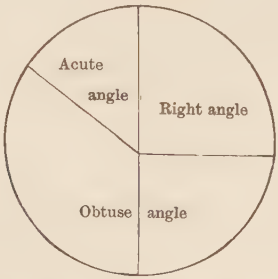
(2) If the meaning of one name is entirely included in that of another name, we get the proposition:



"Whatever deserves to be called horse deserves, to be called animal," i. e. "all horses are animals."

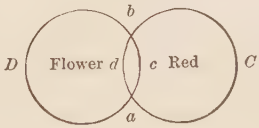
[1] Schopenhauer, *Werke*, vol. ii. p. 50.

(3) If the meaning of one name is completely exhausted by two or more names which exclude each other, we get the proposition:



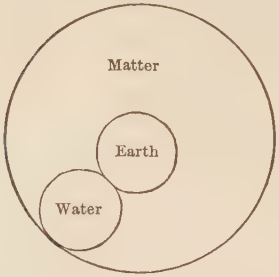
"Whatever deserves to be called angle is either right, obtuse, or acute," or, "all angles are either right, obtuse, or acute."

(4) If two names are applicable to the same thing, we may get the particular proposition:



"Some things which are called flowers may be called red," and "some things which are called red may be called flowers." From this follows also another proposition, namely that some flowers may not be red, or that some red things may not be flowers, which does not add much to our knowledge.

(5) If two names exclude each other, but are both contained in another name, then according to No. 2,



"All that is called water deserves to be called matter," and "All that is called earth, deserves to be called matter." According to No. 4, "Some of what is called matter deserves to be called earth, while some deserves to be called water." According to No. 3, "All that deserves to be called matter, is either water, earth, or something else, not yet named." Lastly, "Nothing that may be called earth may be called water, though both may be called matter."

Syllogism.

After having shown how closely the results obtained by the students of language and thought agree with the views advanced by Hobbes on the true nature of propositions, it will not be necessary to say more than a few words about the syllogism.

Though, as I remarked before, the syllogism concerns us but little in the Science of Thought, yet if the view which we have taken of a proposition be correct, the theory of the syllogism, which is but a combination of propositions, may possibly receive some new light also. A proposition, as we saw, expresses the belief of the speaker that the predicate is a name of the same thing of which the subject is the

name. Given, therefore, two propositions, having one name in common, such as man, in "Cajus is a man," "all men are mortal," the syllogism says that an individual Cajus is namable by the name of mortal, because he is namable by the name of man which is always namable by the name of mortal. Or, expressed in the ordinary language of logic,[1] "Cajus is thought as contained in a certain set of attributes or class, because contained in one which that set or class contains." And negatively, "Cajus is namable by the name of man, and as man is never namable by the name of bird, therefore Cajus is not namable by the name of bird." Or, expressed in the ordinary language of logic, "Cajus is thought as excluded from a certain set of attributes or class, because contained in one which that class excludes." We may put this into a still shorter form by saying that a syllogism expresses the belief that two names of the same things may be names of each other. If Cajus and mortal are both names of the same thing, namely man (whether one, many, or all), mortal may be the name of Cajus. In this we take no account of the character of the premisses, whether affirmative or negative, whether singular or universal, but the application of our general principle to these special cases will cause no difficulty.

The ordinary syllogism is often no more than a definition of synonyms, or a correction of language; it would become almost superfluous, if the words which we use had been framed according to a perfect system, and not at haphazard. For instance, if we used biped as synonymous with man, a syllogism would at once help to correct us. We should say: —

[1] T. H. Green, *Works*, vol. ii. p. 161.

All bipeds are men,
A sparrow is a biped,
Therefore a sparrow is a man.

Unless then we are willing to accept this conclusion, we must correct the definition of biped, and say: —

All featherless bipeds are men,
A sparrow is not featherless,
Therefore a sparrow is not a man.

Logicians have pointed out long ago that everything in a syllogism depends on the premisses, and that if they are right, we really want no conclusion at all. For instance, if I know that all men are mortal, I know at once and without any syllogistic process that the man Cajus is mortal, for otherwise all men would not be mortal. So again, if I know that Cajus is a man, I know that he possesses all the properties of man, and among them that of mortality, which the major asserts as a universal mark of man; I know therefore already that Cajus is mortal. This is clearly stated by Lotze, when he says: "Instead of proving the truth of the conclusion by their own independent truth, the two premisses themselves are only true on the supposition of its truth, and this double circle seems at first to make the syllogism logically quite inoperative." We have only to use mortal in the sense of man, and the circle becomes evident: —

All mortals are mortal,
Cajus is a mortal,
Therefore Cajus is a mortal.

Tempting as the further elucidation of this subject is, this is not the place for it. I have to confine my-

self to the foundations of the Science of Thought, and it must be left to the formal logician to work out the general principles, and to test their truth by applying them to all the minute subdivisions of syllogistic reasoning.

CHAPTER X.

CONCLUSION.

What have we gained?

If any patient reader has followed me so far on a path which I know quite well has been neither smooth nor pleasant, I should not be surprised if he were to ask: What then have we achieved with all our toil and trouble? To some it may seem very little. We are the same, they may say, as we were at the beginning of our journey. We speak, we think, we reason, as we have always spoken, and thought, and reasoned, and we shall never achieve much more in this life than to see through a glass darkly.

It may be so: but if wisdom consists in knowing our ignorance, to know that we see through a glass darkly would represent a considerable gain. Still greater would be the gain, if we knew that it was "through the glass," that is, "because of the glass" that we see so darkly, and greatest of all, if we could find out what that glass really is which makes us see so darkly.

Now this has been the very object of our toilsome journey. We have found out that the glass through which we see darkly is language, and we have also discovered something in the very nature of language which accounts for its partial darkness and its partial light. I cannot say as an Alpine guide might say to

his friends, upon reaching the highest peak, "Now take off your blue spectacles, and see with your own eyes." On the contrary, I have tried to show why we can never do without the blue spectacles of language, why our thought must always be phenomenal, that is, clothed in words. But to know that we are wearing such spectacles is something, and to be able to make allowance for their color and their concavity or convexity is better still, and to try from time to time to remove the dust and mist that fall and gather on our glasses is the best of all, and that is what I have tried to do myself, and what I have advised my friends to do likewise.

Thought and Language inseparable.

No one, I believe, will be able in future to dispute the fact that thought without language or some other kind of embodiment is impossible. What we have been in the habit of calling thought is but the reverse of a coin of which the obverse is articulate sound, while the current coin is one and indivisible, neither thought nor sound, but word.

Logic and Grammar.

Such however is the almost irresistible charm of language that even the greatest philosophers, though they could not but admit that thought without language was a mere phantom, yet continued to treat of thought and of the laws of thought as if they existed by themselves. Logicians particularly were very eager to teach us that the laws of thought should not be confounded with the laws of language, that logic was one thing and grammar another, that logic was the same for all languages, grammar something peculiar to each. As if logic could exist anywhere except in language, manifested under various forms, no doubt, but real-

ized nowhere but under these various forms, just as the Beautiful is realized in the myriad forms of nature. Logic, as a kind of general grammar, has been abstracted from the grammars of the world, not grammar from logic.

Philosophy deals with Language.

No philosopher, if pressed on this point, is able to deny it. I gave a string of utterances of the most authoritative philosophers, all more or less willingly admitting the inseparableness of language and thought. To some it seems a mere truism, to others a truth that is inconvenient, but one that cannot well be denied. But as to drawing the inevitable consequences, as to seeing that thought lives in language, and in language only, and that philosophy must learn to deal with language, as history deals with events — not one philosopher that I know of has ever dared to say so.

For the sake of making my meaning clear, I spoke just now of language as spectacles, but in reality language constitutes our very eyes. Language is the true organ of our mind. We think with our words as we see with our eyes; and we must not forget that even our eyes are only lenses, and our words only instruments, and that the Self who seems to see and the Self who seems to think, is different both from the eyes and from the words. Who that Self is, cannot be asked or answered here. If life lasts, I mean to answer it in another treatise.

At present I only recapitulate what I have tried to establish in the present treatise, namely, that thought is impossible without language, and that language forms the organ of thought, as much as the eye forms the organ of sight and that the first, if not the only, subject which every true philosopher has to deal with, is language.

The next point to be determined was: Can we know anything of this organ? We study the structure of the eye till we can imitate it by a kind of artificial eye, called spectacles. The theory of vision has revealed many secrets to us, has warned us against many illusions, has, so to say, opened our eyes, so that it leaves us, in the end, aware of those illusions, even though unable to fight against them. Nature of Language.

The same with language. Language seemed a very mysterious thing, the most wonderful gift bestowed on man by a divine power. Whoever began to meditate on it, felt bewildered, like the naturalist lost in a primeval forest, and the wisest that could be said about language seemed to be that it was beyond human conception. And now, how different! We have perhaps not been as successful yet as certain physiologists who have traced the eye and the faculty of vision back to a sore place in the epidermis of one of our ancestors. But so far from being mysterious and wonderful, language has become perfectly simple and intelligible. Give us about 800 roots, and we can explain the largest dictionary; give us about 121 concepts, and we can account for the 800 roots. Even these 121 concepts might be reduced to a much smaller number, if we cared to do so. Any one who examines them carefully, will see how easy it would have been to express to dig by to cut or to strike; to bite by to cut or to crush; to milk by to squeeze; to glean by to gather; to steal by to lift. Many concepts, such as to cook, to roast, to measure, to dress, to adorn, belong clearly to a latter phase of civilized life. If we see how many special purposes can be served by one such root as I, to go, or PA*S*,

to fasten, the idea that a dozen of roots might have been made to supply the whole wealth of our dictionary, appears in itself by no means so ridiculous as is often supposed. However, to have reduced all our thoughts to about 121 concepts, and all our words to about 800 roots, is an advance. We need no longer stare at language as something wonderful by its complexity, but we may look at it intelligently, gain an insight into it, and admire it in the end all the more, not for its wonderful complexity, but for its far more wonderful simplicity.

Language begins with Roots, not with Nouns or Verbs.

The explanation of the actual origin of roots must naturally retain something of an hypothetical character, like the solution of all problems which carry us back to times when man can hardly be said to have been man, when language was not yet language, and reason not yet reason. We cannot speak dogmatically about those far off regions, but we have done all that can fairly be expected, if we suggest an explanation that is possible and intelligible. Such seems to me Noiré's suggestion that roots owe their origin to the clamor concomitans of our early social acts. I look upon this clamor, not only as concomitans, but as significans, namely as soon as it is used for the purpose of reminding ourselves and others of these acts themselves, and I therefore see the true origin of language and thought in the roots, as signs of our acts.

It is of these our own self-willed acts, that we become conscious without any effort, and not till we have become conscious of these acts as acts, that is to say, as perceived in their results, can we make the next step, that of naming the results of our acts by the roots which signify these acts. Others, however,

place the origin of language, not in the roots as signs of acts, but in the first conceiving and naming of the objective products of our acts, nor do I deny that language may be so defined as to begin with nouns or names of objects.[1] We might say with the same right that the organic life of our globe begins with stratified rocks, and that what lies beneath, is not yet fertile earth. Nevertheless, not only would the regular stratified rocks be impossible without the underlying volcanic masses, but we often see how they break through the stratified rocks and in metamorphic layers form an essential part of them. The same applies to language in more minute detail than we imagine. Those who consider that nothing deserves the name of language that is not, so to say, stratified or organic, very properly begin the history of language with the names of objects. I go a step further back, and date that history from the first appearance of roots, as signs of self-willed acts, because it was by these roots only, that afterwards the objective products of such acts could at one and the same time be both conceived and named. If we denied the name of language to those early beginnings, we should have to deny it likewise to all interjectional and mimetic expressions. In one sense, this would be perfectly right; but, taking languages, such as they are, we cannot deny that, within a limited sphere, we make use of interjections and imitations of natural sounds for the sake of communication. Lastly, while others would prefer to treat all demonstrative elements as a kind of detritus of earlier

[1] Herder, in his Essay *Über den Ursprung der Sprache*, says: "Der Gedanke an die Sache selbst schwebte noch zwischen dem Handlenden und der Handlung."

roots, I see no reason why we should not accept them as real survivals of a period of speech during which pantomime, gesture, pointing with the fingers to actual things were still indispensable ingredients of all conversation. Still, if one thinks of the distance which divides us, not only in time and space, but in very thought from the men whose minds we undertake to analyze, one shrinks from making any positive assertion. If anything teaches us the lesson that what is likely and natural is not always what is real, it is a study of language, in which anomaly becomes as often analogy, as analogy becomes anomaly. Many times have I envied others the gift of confident assertion, for whenever I venture at all to speak about the origin of speech, and to reason about the beginning of reason, I cannot bring myself to say more than may, even when in my own mind I feel as convinced as possible that what I state must have been as I state it, and could not have been otherwise. I willingly admit that we may so define language as to exclude interjections, demonstrative elements, and even roots. But to me such a definition seems too narrow, and to leave a most important and difficult phase in the growth of reason and language unexplained.

Radical Analysis.

In order to show how few simple elements remain if we analyze any sentence into its constituent element, I choose the first paragraph of a leading article in the "Times" of Nov. 9th, 1886:

"Every Englishman is entitled to his grievance, as may be proved out of Magna Charta and the Bill of Rights."

Every is ever-each. Ever, A. S. æfre, goes back to Gothic aivs, Lat. aevum, Sk. evam, from root I, to go.

Each is á-líc, i. e. aye-like, Germ. jeglich from á, Germ. je, and this from the same root I (in eva), and lic, Sk. *dris*, from root DÆRS, to see.

English-man. English and England, not from angulus, as Beda tells us, and modern historians repeat, but from the Angrarii, the old Angrivarii, mentioned by Tacitus.[1] Ang-ra was probably a proper name (possibly connected with Ingaevones); varii is the A. S. ware, from root VÆR, to keep off, to guard. Man, from root MAN, to measure, to think.

Is, from root AS, to breathe, to be; Sk. asti, Gr. ἐστί, Lat. est.

Entitled, from title, Lat. titulus, derived from root KI, to consider, to honor, Greek τί-ω, τι-μή, etc.; or for sti-tulus, i. e. what is stood up or put up (like tabula), from root STÂ, to stand.

To, demonstrative element, meaning, direction towards a thing.

His, gen. of he, demonstrative element.

Grievance, from old French grever, Lat. gravare, to burden, and this from gravis, Gr. βαρύς, Sk. guru, Goth. kaur-s; root GÆR, otherwise not found in Sanskrit.

As, for also, alswa, A. S. eal swá, from eal, all, Goth. all-s, possibly from root AL, to grow (see p. 395), and swá, in one's own way, from Sk. sva-s, suus.

May, from A. S. mugan, to be able, root MA*m*H, to be strong.

Be, from root BHÛ, to be, to grow.

Proved, from O. F. prover, Lat. probare, probus, good, fit. Probus has been derived by Corssen from Sk. pra + bhu, which is doubtful.

[1] See M. M.'s *Chips from a German Workshop*, vol. iii. p. 123.

Out, Sk. ud, forth, demonstrative element.

Of, Sk. apa, away, demonstrative element.

Magna, Lat. magnus, from root MA*m*H, to be strong.

Charta, Lat. charta, paper, Gr. χάρτη, from root SK*Æ*, to shear.

And, Sanskrit, anti, near.

The, demonstrative element, ta in Sanskrit.

Bill, Lat. bulla, what bulges out, a water bubble, a boss (attached to a document), from root GAL, to drop.

Rights, Lat. rectum, from regere, root *Æñ G*, to stretch.

The writer of this article in the "Times" was little aware of the unbroken threads that united his thoughts and words with the earliest utterances of the Aryan race: and yet not one word could he have written, if those distant ancestors had not toiled for him, shaping their involuntary social cries into voluntary signs, and elaborating their roots and words till what was scratched came to mean a charter, and what bubbled up became bulla, a knob or round seal attached to charters, supplying likewise for future ages such useful words as Papal bulls, bulletins, bullets, billets, bouleversements, and many other more or less serious bubbles.

Simplicity of Thought.

The simplicity of our language has now been rendered clear to everybody, but the equal simplicity of our thought is still far from being recognized. Even those who see that the mind cannot possibly do anything but frame words out of given materials and employ them for its own purposes, cannot give up the idea that there is something mysterious in that employment, something

difficult or impossible to account for by human philosophy. And yet we have only to ask ourselves what we are doing when we say that we think, in order to find out that all comes back to a is b, or a is not b. We have words which contain all that we put into them, neither more nor less.[1] With these words we form propositions, and combinations of propositions which we call syllogisms, and we may try what we like, we can never do more.

Poetry and Argument.

But poetry, it is objected, is surely more than a mere pouring out of our dictionaries, and accurate argument more than a fitting together of stray words. Yes, there is method in the madness of poetry, as there is method in the dryest argument. But poetry, in the widest sense, may well be likened to a shaking of the kaleidoscope of our words and thoughts. The genius of the true poet consists in the power and boldness with which he can stir his mental kaleidoscope, his taste is shown in retaining those combinations of brilliant gems which please him and are likely to please others whom he wishes to please. And the most closely reasoned argument of the philosopher, what is it but a careful measuring of every word, and dovetailing them so as to allow of no breaks or gaps? We are so accustomed to poetic imagery and exaggerated rhapsodies when we speak of our mind, that we naturally shrink from such prosaic views. But here, as elsewhere, we must remember that things remain what they are, even though we bring them under new categories. Homer remains as great

[1] Thus an early commentator of Aristotle said: Οὐ δεῖ πλέον ἐπιζητεῖν παρὰ τοῦ λόγου ἢ ὅσον ἐπιδέχεται ἡ τῶν πραγμάτων σαφήνεια. See Noiré, *Logos*, p. 173.

a poet or maker as ever, even though we can clearly see how he put together the words forming the invocation to the Muse, asking her to tell him of the much-travelled man who was much tossed about, after he had destroyed the sacred city of Troy. Nor does our admiration of Newton grow less if we are told that he discovered the law of gravitation, not by the sight of a falling apple, but by patient addition and substraction. There remains mystery enough even after we have examined the brushes and the colors with which Rafael created his Madonna di San Sisto, but to my mind the simpler the means by which the grandest triumphs of human nature were obtained, the more wonderful the result.

Simplicity of the Mind.

If then the process of thought is so simple as we saw, not less simple, at least, than that of speech, it follows, that the complicated apparatus which had been postulated by most philosophers for the performance of thought in its various spheres of manifestation, must make room for much plainer machinery. Instead of intuition, intellect, understanding, mind, reason, genius, judgment, and all the rest, we want really nothing but a self-conscious Monon, capable of changing all that is supplied by the senses into percepts, concepts, and names. These changes may be represented as something very marvellous, and we may imagine any number of powers and faculties for the performance of them. We may ascribe the change of sensations into percepts to the power of imagination (Einbildungskraft); the change of percepts into concepts to the understanding, the change of concepts into names to the Logos, the formation of propositions to our judgment, and the formation of syllogisms to our reason. We

may employ this or any other more or less mythological terminology for the so-called faculties of the mind. But we may also adopt a far more straightforward process.

If we simply take what we find given us, what we really have to deal with are names, names which represent percepts, which represent sensations. We never find any of these ingredients by themselves. Except the names which cannot be argued away, everything else is the result of our own scientific analysis. With us, as self-conscious Mona, even sensations never exist by themselves. They remain mere irritations, till they are perceived. Afterwards, when we call them percepts, or, with Kant, Anschauungen, they seem to be something by themselves, but again they are not. We never have a percept or an Anschauung, except we can lay hold of it conceptually. We often look at a picture of Tintoretto's, without knowing what it is. For a time we see nothing but color and chaos, and emerging from it here and there something like a leg, or a hoof, or a cloud, till gradually we discover the outlines of men and women and houses and trees, that is to say, we bring our percepts (Anschauungen) under concepts (Begriffe). We now say that we understand and comprehend the picture, while before we only stared at it and were irritated by the sensations which it produced on our retina. And as it is with a picture, so it is with reality, though we are hardly aware of it. When we see some motion among the branches of distant trees, we do not know yet whether it is something that moves by itself or something that is moved. As soon as we perceive a body moving through the branches, we

Names.

know it must be an animal, whether a bird, or a deer, or a man. As soon as we observe four legs, we know it is some quadruped, and when we remark its antlers and its fallow skin, we know it is a stag. This process goes on constantly, but it goes on so quickly that we are hardly aware how we try on concept after concept from body, animal, quadruped, deer down to stag, till at last we find the concept that really fits. But the shot is fired before the animal has time to run away. And this applies to every percept. We do not perceive green, till we conceive a color that might be blue, or yellow, or gray, but is by us conceived as green. We do not perceive ten, till we have counted twice five, or five times two, or some number, i. e. concept, which is more than nine and less than eleven. And if we cannot perceive without conceiving, neither can we conceive without naming. We may name ten by 2×5 or 5×2, or $9+1$, or by $11-1$, but without some such name ten does not exist for us. Nor does green, nor does stag, nor does deer, or quadruped, or animal, or body, or something or nothing.

If then we have learnt how we name, we have learnt also how we conceive and perceive, in fact we know, what we wanted to know, how we think. The material of thought is, no doubt, given us, but we cannot even perceive it without first submitting it to the forms of sensuous intuition and to our categories. Kant's so-called forms of intuition amount to no more than that whatever is to exist for us, must be in some place and at some time. What is nowhere and never, is to us as if it were not. As to the categories or the forms of our understanding, we mean no more by them than that without these forms of synthesis

we could not understand anything that is given to us in space and time. They are the simplest necessities: they are what we cannot do without, however hard we try. How could we understand what is given to us, unless we applied to it the category of causality, that is, unless we accepted our sensations as caused by something in time and space? It is thus that we get an objective world, but in it again, we cannot understand any object, unless we take it as a substance endowed with qualities. Having thus applied the fundamental categories of οὐσία and ποιόν, all the others follow in regular succession, and the world of thought is finished, before we are aware of it. Given a self-conscious Monon, capable of adding and substracting, and there is nothing which can properly be called thought, from the hymns of the Veda to the last poem of Browning, that is not perfectly intelligible in its structure. Let those who doubt it, try the experiment, and they will see that the Science of Thought has really solved the riddle which it undertook to solve.

Verbal knowledge.

I know, of course, that every effort will be made to controvert the conclusions at which we have arrived. If this were true, it will be said, if all thought were embodied in words, if to think were to speak, if to reason were to combine and to separate, all our knowledge would be merely verbal — a conclusion sure to horrify not only the intellect, but the common sense of our age. "Merely verbal," "merely nominal," are the most condemnatory terms by which in our days knowledge can be qualified. I have nothing to say against this contempt of mere words; I should share it, if only I could ever meet with mere words, mere flatus vocis.

Mere words have no existence at all except in dictionaries, where they are perfectly harmless, and in the brains of certain philosophers, where we cannot say quite the same of them. But leave out the mere, and no man of common intellect or common sense will maintain that we can ever know anything except through words. There are some brave disputants who assure us that they do not care for words, but for facts only. We know gold and silver, copper and brass, they say, which we can see and touch and assay without using any words at all. Their names tell us nothing, all that we know of them we know through our eyes or through our hands. Leave us our things, we leave you your words.

Gold.

But what are things? Things, as Dr. Lewins has well said, are thinks, and thinks, I add, are words. Who ever knew a thing, if by thing is meant what is independent of thought? And who ever knew a thought, if by thought is meant something independent of language? We speak of gold, but how do we know gold? Certainly not by our eyes. Our eyes may receive the reflection of gold, but that is a subjective impression only, which comes and goes without even becoming an object to us, till we ourselves translate certain impressions into a percept, till our knowledge becomes subjective, and what we know becomes objective to us. What we afterwards call gold, is at first a very vague object, something to be handled, to be kept or thrown away, and no more. It is not yet even a stone or a metal to us, for how should we know anything of stones or metals, precious or otherwise, before we have even the names of them? There are languages without names for gold, and

many more without names for metal, and the utmost we can expect as a first attempt at knowing gold, would be something we like to keep, something that pleases us, something that glitters, and no more.

Then, how do we come to know gold? Of course we begin with our senses, and with the percepts or intuitions with which they supply us. On them all our knowledge and language are founded, but they by themselves are neither knowledge nor language. Our percepts become knowledge by being named, and they become named by being conceived. We distinguish these three stages, but we cannot imagine their separate existence. A perception per se would be a dull state of sensuous tremor; a name by itself would be a mere sound; a concept by itself would be even less than a sound. Percepts by themselves are nothing, concepts by themselves are nothing, names by themselves are nothing, but the three together are knowledge. The steps leading up to a knowledge of gold must have been very gradual. At first, what we now call gold, would probably have been no more that what was "dug up." It would have been known as the result of digging, and called by a name derived from the clamor concomitans of digging, such as SAK or KHAN.[1] Or it might have been classed among glittering things, and been called rukma, vasu, *k*andra, ar*g*una, all names of bright things, and especially of gold in Sanskrit. Nor can I bring myself to believe, when Sanskrit possessed so many names for gold, that the most comman name of all, namely hira*n*ya, should not come from an Aryan root. There is the root HÆR, with

[1] The Hebrew châr*û*z, gold, comes from a root meaning to cut, to dig. Should nishka stand for ni*h*-shka?

the meaning of brightness, which yielded, as we saw,[1] many names of bright colors. From it comes harina, Zend zairina, Old Slav. zelenŭ, gold, which would account for Greek χλοννός, a rare name for gold, quoted by Hesychius. By the side of harina, we have in Sanskrit harita, a Vedic name for gold, Zend hairita, identified with Lith. geltas, and Old Slav. zlŭtŭ. Can we suppose that the Greek χρυ-σός is unconnected with these words, and borrowed from Hebrew châr-ûz, or Assyrian hurâsu, as Hehn, Benfey, and Schrader suggest? First of all, châr-ûz is a scarce and poetical name for gold in Hebrew; secondly, why should châr-ûz have been pronounced χρυσός? Words ending in σος are very uncommon in Greek, but if har can become zlŭ in Old Slavonic, it may have become χρο in Greek, and a derivative χρυτ-ιος[2] would regularly have become χροσος in Greek, so that the only anomaly is the transition of ο into υ, which in a name passing, it may be, through the mouths of foreign miners, may be excusable, though I say no more.[3]

Gold therefore, when called χρυσός in Greek, was conceived as the glittering, from the root HAR, while another root, VAS, to shine, accounts for the Sk. vasu, gold, and for the Latin aurum (aurora), for ausum.

It may, no doubt, be said that to know gold simply as what is dug up or what glitters, is not much; but though it is not much of knowledge, it is knowledge; and that is much, that is in fact what constitutes our

[1] Page 300.

[2] The change of suffixes is dialectic, as in ἄργ-υρος, silver, Lat. argentum.

[3] On roots ending in ar or ru, see p. 361; and Brugmann, *Grundriss*, § 80.

intellect, as distinguished from our senses. With every new concept there may be a new name, with every new name there will be more knowledge, and that knowledge, though it is certainly verbal or nominal, is not what can be called merely verbal or merely nominal. Whoever called a particular kind of dug up ore glitter or χρυσός, had an object in calling it so, and by calling it so he could for a time distinguish it, sufficiently for all practical purposes, from other kinds of ore. Having once framed that name and retained it, whatever new qualities a miner discovered as distinguishing this glitter from other kinds of glitters, would be added to its distinguishing features, or its connotation, as we call it; but every one of these qualities would again be known only on condition of its being named. Suppose it was discovered that gold, when struck would not break, but bend, thoughtless people, savages as we call them, would simply throw away what would not bend, and keep what would bend or break into smaller stones, if smaller stones were wanted for building or some other purpose. They might then (if they had a name for useless things), call gold rubbish, but not till they had name and concept, or concept and name for soft, could they call gold soft or malleable. And what was soft? What could be struck without breaking, what yielded, was pliant, flexible, could be rubbed till it became smooth and glittering. That was called soft, mollis, Sk. mṛid-u, from MṚD, to rub down. And it was the same with all other qualities which were discovered in gold. They could never be said to be discovered until they were named. People could not say that gold was not brittle, unless they had the notio and the nomen of brittle, i. e. breakable. They

could not call it ductile, without having elaborated the concept of drawing out, nor could they call it by any other name, until they had elaborated a name with which, as if with a pair of tongs, they could lift a piece of gold from out a rubbish-heap of sensations in which it was hidden. It is a long way, no doubt, from glittering and malleable to specific gravity of 19·3, but every step on that long road was made like the first. It was a constant repetition of conceiving and naming, of naming and conceiving, which led to what we call true knowledge, and such true knowledge is always nominal and verbal, nor can it be anything else.

Of course it will be said by the despisers of what is called verbal knowledge, that such knowledge would not help us to distinguish between a sovereign and a brass penny. But they forget that we should not know either a gold sovereign or a brass penny without a name, that every name includes knowledge, and that it is only after we know what specific gravity means that we can weigh a sovereign and a penny, and distinguish one from the other. It is true, we cannot wrap up all the qualities of gold in one name; one name can express one quality only, and by no means always the most important. The rest, however, are connoted and implied, and true knowledge consists in knowing both the notation and connotation of names. We might call gold, for instance, the enemy of Aqua Regia or nitro-muriatic acid, because that alone is able to dissolve or conquer gold; but even in that case we should have only one quality of gold actually expressed by its name, the rest being understood.

We see therefore that we must always begin with

sensuous irritation and intuition, but that intuition by itself is not knowledge, conception by itself is not knowledge, name by itself is not knowledge. The three together only represent what we mean by knowledge, and the final embodiment of that knowledge is the word.

Matter.

This will become still clearer, if we examine a few names, not of tangible objects, such as gold, but of concepts to which nothing tangible corresponds, and which are nevertheless the most important ingredients of what we call knowledge. There is nothing tangible, for instance, that corresponds to the name of matter. We can touch gold, stone, and wood, but we never can touch matter, as such. If we look to the history of the word matter, we know, of course, that it was the Latin materies, used originally in the sense of the solid wood of a tree, then of wood or timber for building. That concept, having once been formed, was generalized so as to mean anything substantial out of which something was shaped and fashioned, and a distinction soon arose between the form, for instance, of a wooden statue, and its substance or materies. Here it was still wood, but soon, when statues were made of metal or marble, these also were called materies. And when the question came to be asked what other things, and what the whole world was made of, what should it be called but again materies, or matter? Thus we came into possession of matter, a word to which nothing tangible can correspond, but which nevertheless has occupied the mind of the best thinkers more perhaps than any other word. Our age is said to suffer from materialism, to be materialistic, and the mere name is supposed to convey a severe condemna-

tion. But what is the real meaning of matter, and how can we determine it? In this case we surely know nothing but the name. The senses can give us no information, for it is exactly what the senses do not present to us that we call matter. But when I say that we know matter by its name only, I do not mean the sound produced by the letters m, a, t, t, e, r, I mean the name, as name, as nomen and notio, and that name conveys neither more nor less than has been put into it by those who use it.

If that name had been used by philosophers only, or by men who weigh their words, and who, by means of a definition, can tell us exactly how much each word weighs, there would have been much less difficulty. But names are used by the wise and the foolish, and the foolish, as we know, are in such an immense majority that the wonder is that words have any definite sense left at all. With the people at large, matter can mean almost anything. What is the matter, they say. They speak of decaying matter, of important matters, and if you asked them what was the real meaning of matter, they would probably use a most convenient verb, and reply, "It does not matter."

It is different with philosophers. They must be ready to give a definition of every word they use. They need not agree in their definitions of matter, and we know that they do not agree, but at all events whatever they know of matter is embodied in that word, and in its definition, which consists again of words.

If we asked our most advanced philosophers what they mean by matter, they would probably say that it is the most general name for whatever acts on our

senses, what in German is called by a most telling word, wirklich, i. e. real, because working on us. I have tried to show (page 245) why Mill's definition of matter as "the permanent possibility of sensation" is faulty. But I am quite willing to admit that matter may be called the objective cause of all that we perceive. For the very reason, however, that it is a cause, matter can never fall under the cognizance of our senses. All that we can predicate of matter is that it causes our sensations, that it exists in space and time, that it is one, but appears under an endless variety of phenomenal forms, that it remains unchanged in the change of outward appearances. It differs from the Ding an sich, because this, according to Kant, is beyond the forms of sensuous intution (space and time), and beyond the category of causality; and it may be distinguished, at least in German, from stuff (Stoff), which means actual matter, or matter in the form in which it appears to our senses. Stuff changes and decays, matter is supposed to remain the same.

All this is embodied in the word matter, and except this word, there is no other vessel to hold all that it contains or means. We could not even define matter by a higher genus to which it and other things belong, for substance, which may seem to be a higher genus, if supposed to be without the qualifications of extension, is only a more abstract name for matter. The two words are to all intents and purposes synonymous, and the one comprises no more than the other. It is quite true that the meaning of a name may change, nay, that different authorities may give different interpretations of the same name. But that is also the fate of all our knowledge. It changes

and, we hope, it grows. We know more of gold than Aristotle did, and therefore the name means more to us than it did to him. A philosopher knows more of matter than a ploughboy does, and therefore the same word conveys very different meanings to the one and the other. But whatever meaning it conveys is embalmed in the name, which contains to every man exactly what he has found in it or what he has added to it.

Materialism.

People are very apt to speak contemptuously of quarrels about names, or, as the favorite phrase goes, mere names. But is the fight about Materialism which fills all our books and journals a mere fight about words? Is it simply a question whether we should call matter materies, or hyle, or Stoff? Hardly, for such a question would not stir our hearts or rouse our passions as they are roused when the issues of Materialism are discussed. Nor is there anything in matter to rouse our passions, or to excite our approval or disapproval. Matter is all that is given us to know. It is immense, it is marvellous, it is incomprehensible, or, at all events, what we can comprehend of it, is but a very small portion, and yet that small portion constitutes nearly the whole wisdom of the human race. Why then should we be angry with matter, matter which, when it was called by the more poetical name of Nature, has been called a kind mother, and has been worshipped among the ancient gods of the world?

There is no harm in matter, unless we put harm into it. And this is what we do, if we forget that matter is always objective, and therefore impossible without a subject, that it is one half only, and cannot be the whole of the world. Matter could not exist with-

out us, I do not mean without any single individual, but without that subjective and knowing side of the world which we represent as opposed to the objective or known side. Materialism may in one sense be said to be a grammatical blunder; it is the misapplication of a word which can be used in an oblique case only, but which Materialists use in the nominative. In another sense it is a logical blunder, because it rests on a confusion between the objective and the subjective. Matter can never be a subject, it can never know, because the name was framed to signify what is the object of our knowledge or what can be known. Materialism, therefore, in the ordinary sense of the word is self-contradictory. It begins with matter, such as it is, namely as objective, and then tries to show that by slow degrees it may become subjective. But A never becomes non-A. At first matter means what is perceived or is the cause of our perception, but in the end it is supposed to have come to mean the very opposite, namely what perceives. What causes the irritations is confounded with what receives the irritations, what is perceived with what perceives, what is conceived with what is conscious, what is named with the namer. There we see how both language and thought contradict themselves. The object could never be conceived except as perceived by a subject, and yet, according to the teaching of Materialism, the perceiving subject is to be in the end the result of a development of the object. This is a fault, call it logical or grammatical; and the Science of Thought, based as it is on the historical growth of language, detects it at once, and shows up Materialism, in the ordinary sense of the word, as a schoolboy's blunder.

But if Materialism is one-sided, so is Spiritualism.

Spiritualism.

Spirit, like Matter, is something with which the senses does not supply us. It has been postulated behind the various manifestations of our intellect as matter has been postulated behind the various manifestations of objective nature. Like matter, it is a name that may be interpreted in various ways, but which ought never to become self-contradictory. Now spirit is subjective and knowing, and if therefore Spiritualism tries to account for what is objective and known as the result of spirit, it commits the same blunder of which we accused Materialism. Spirit and Matter are in fact correlative terms. As a subject cannot exist without an object, nor an object without a subject, spirit cannot act without matter, nor matter without spirit. But as little as an object can produce a subject, or a subject an object, can matter produce spirit, or spirit produce matter. Matter is determined by us quite as much as we are determined by matter. Spiritualism is therefore as untenable as Materialism, and it is only by a study of thought in language that we can learn what spirit and matter meant in the beginning, what they came to mean in time, and what we wish and bid them to mean in future. True philosophy, here as elsewhere, consists in a correction of language, and that correction may sometimes necessitate the total suppression of old words. Matter, in the usual sense of the word, as something outside and independent of us, does not exist. Spirit, in the usual sense of the word, as something inside and independent of the world without, does not exist. There exists a perceiving subject and a perceived object. Granted these two, and the whole world, so far as it is ours, is explained. All perception is realized in conceptual

names, all that is perceived is realized in forms. The world consists of Nâma-rûpa, names and forms, as the old Indian philosophers discovered long ago, and as we shall have to discover ourselves, if we wish to understand the world.

At present I am only concerned to show how in all our most important interests we depend on names, how our best and truest knowledge is always nominal. What can the senses help us in settling the meaning of matter or spirit, and if the senses cannot, what can? Our mind, our intellect, it is said. Yes, by all means! But where do we find that mind and intellect? Some say, in the brain. The brain is a wonderful labyrinth; I have looked into it and examined it, but I cannot find any trace of mind or intellect in that conglomerate, as little as I can find it where the ancients saw it, in the heart or the stomach. The brain may be a sine qua non of intellect, as the eye is of sight, and the ear is of sound, but as little as the eye can see and the ear hear, can the brain think. I find intellect nowhere but in the products of intellect, namely, in words. These I can hear and perceive, these I can understand, nay, I can trace them from their present form to their most simple and natural beginnings. The whole world becomes clear and transparent as soon as I see it in words; not in sounds, but in words; in living, not in dead words; in words as independent of their sounds as the oyster is of its shell; in words which are thoughts as much as thoughts are words.

Let us take another of these word-thoughts or thought-words, which has been an apple of discord among philosophers for thousands of years, and which has of late become the chief topic

Species.

of discussion among men of science. I mean Species. What can experience and experiment and the whole of natural science teach us about it? Nothing, simply nothing. We never see a species or handle a species. If we saw it, we should not know it, unless we had first learnt to think and name it. Our knowledge of species is purely nominal, if only we remember that nominal is gnominal. But I go further, and maintain that, as applied to natural history, species is a myth, that is, a spurious and deceitful word, and that Species must go into the same limbo as Titans and Centaurs, if we want to understand the real working of nature.

One of the most important books of this century is Darwin's "Origin of Species." But has he told us what species means? Read it from beginning to end, and you will not find a real definition of species in it. If Darwin had studied the history of the word species, I believe he would have called his book not the Origin, but the Abolition of Species, for, to my mind, the result of all his observations and all his reasonings is that the word species is dead, and must be struck out of the dictionary of philosophy and physical science. If Darwin is right, there are individuals, there are more or less prominent varieties, and there are genera, but species, in the old sense of the word, there are none. Darwin himself complains again and again ("Origin of Species," p. 412) that no one has ever defined species and variety. "No one has drawn," he writes, "any clear distinction between individual differences and slight varieties, or between more plainly marked varieties and sub-species, and species. On separate continents, and on different parts of the same continent, when divided by barriers of any kind, and

on outlying islands, what a multitude of forms exist, which some experienced naturalists rank as varieties, others as geographical races and sub-species, and others as distinct though close allied species."

That Darwin and his fellow-workers have rendered excellent service by reducing the enormous number of species, is well known. "The endless disputes," as he says himself, "whether or not some fifty species of British brambles are good species, will cease." It has ceased, and we cannot be too grateful for it. But if Darwin had reasoned more boldly, he would have put an end, not only to the fifty species of brambles, but to all species, to the very name of species. Darwin seems to imagine that, according to the old definition, all species were produced by special acts of creation.[1] This may have been so in England, it certainly was not the meaning assigned to species by philosophers in Germany or France. The term species was formed quite independently of theological ideas, and I doubt whether even the idea of a creation, in our sense of the word, was known when the Greek word εἶδος was formed and defined. Nor would Darwin himself be satisfied, if we thought he had done no more than to prove that species are not the result of special acts of creation. Few people really wanted such proof. What he has done was to show that the name of species should in many cases be replaced by that of variety, because the differences separating one species from another could be proved to be due to natural selection and other secondary laws. "Differences," he says,[2] "between any two forms, if not blended by intermediate gradations, are looked at by most naturalists as sufficient to raise both forms to

[1] Darwin, *Origin*, p. 412.

[2] Ibid. p. 426.

the rank of species." This, it is true, need not be Darwin's own opinion. But he goes on to say: "Hereafter we shall be compelled to acknowledge that the only distinction between species and well-marked varieties is, that the latter are known, or believed to be connected at the present day by intermediate gradations, whereas species were formerly thus connected. It is quite possible that forms now generally acknowledged to be merely varieties may hereafter be thought worthy of specific names."[1]

If Darwin had attempted, as was formerly the fashion, to give a formal definition of variety, species, and genus, I believe he would have seen that the term species had done its work and might in future be dispensed with altogether. He seems to see this himself, when he says:[2] "We shall have to treat species in the same manner as those naturalists treat genera, who admit that genera are merely artificial combinations made for convenience." "This may not be a cheering prospect," he adds, "but we shall at least be freed from the vain search for the undiscovered and undiscoverable essence of the term species."

What Darwin calls the undiscovered and undiscoverable essence, is really the meaning of species, and Darwin therefore acknowledges himself that the whole of his theory depends on the meaning of the word species. And who is to tell us the real meaning of that word, except those who framed it, who used it, and who after a time, when it has fulfilled its purpose, have a perfect right to kill it? No one will maintain that our senses can help us in this matter, for we never see a species unless we first

[1] *Origin*, p. 426. [2] Ibid. p. 426.

make it. The first question therefore is an historical one, how was the word species formed, and what was it intended to signify?

In this sense a most interesting book might indeed be written "On the Origin of Species;" showing how such a name came to be framed, how its meanings varied at different times, in different languages, and in different systems of philosophy, till at length it was left to our age, and especially to Darwin, to show that there is no such thing as species, and that for comprehending the variety of nature we want no more concepts or names than individual, variety, and genus.

Though species has ceased to be a useful or necessary word, it does not follow that it did not render good service in its day, that it does not represent a phase of thought that must be passed through before it can safely be left behind. It is a word to which nothing tangible could ever have corresponded, but such words, if genuine, are really the most useful coins of our intellectual currency. How then can we know what species was, and what it signified? No authority on earth can tell us what species ought to mean. We have the word, and all we can do is to try to find out its origin and development. Now species is a mere translation of the Greek εἶδος, and the Greeks could originally by εἶδος have meant nothing but "what is seen," the appearance, the shape or figure of anything. As shapes or figures varied, as, for instance, some stones were red, others brown, and others black, these εἴδη or shapes came to be sets, sorts, classes of things. And as these εἴδη depended on their common outward appearance only, they were different from γένη, genera, kinds, which

depended on a real community of origin. For logical purposes, therefore, nothing could be more convenient than these two terms, εἶδος and γένος, species and genus, comprehending, as they do, smaller and larger classes of things. Thus dwelling-houses would form a species, houses a genus; but dwelling-houses too might form a genus, and inns a species. In Sanskrit also we find *g*âti, genus, used in the same sense, while species is called âkr*i*ti, literally form. There is nothing to be said against this logical nomenclature, though it would not be difficult to suggest less ambiguous terms.

But when this nomenclature was transferred to natural science, it caused at once considerable confusion of thought. If animals or plants can be proved to be descended from common parents, they should be called genus, or kith, or breed, but never species or class. The name of species is not wanted, unless we mean to use it for such vague concepts as red flowers or blue flowers. We may distinguish between genera and sub-genera, as we distinguish between brothers and cousins, but there is no room in nature for more than two concepts, namely, animals and plants possessing a common ancestor, and propagating among themselves, or animals and plants not possessing a common ancestor, and not propagating among themselves. There may be animals and plants the relationship of which cannot be proved as yet, but if we call these species, as distinct from genera, we should only give a name to our ignorance, and that is always a most dangerous proceeding. If Darwin's theory is right, there is an end of all species, or, at all events, there ought to be, for to speak of natural species, held together

by a certain amount of resemblance, is nothing but inarticulate thought.

All therefore depends here on the word we use. If we know what we do and what we do not mean by species, the question, for instance, whether man constitutes a separate species, can never be asked. The only question is, whether it is possible to prove that the human breed shared common parents with any other animal breed? If that can be proved, then these two breeds form one breed, or one genus. If it cannot be proved, nothing must be asserted, though the possibility of connecting links need not be denied. That man is an animal requires no proof; that man is descended from another animal does require proof. All depends here, as elsewhere, on the words we use, and on the definitions we give of them. I call man an animal with the distinguishing mark of capacity for speech. I see that capacity in no other animal, and that is sufficient for the purpose of classification. I should call man, before he had formed his language, as I should call a baby, a mere animal, till I discovered in them the capacity for language. With all my opposition to Darwin, I have really gone far beyond the point where he stopped, for I have always treated man, not only as a descendant of an animal, but as to all intents and purposes an animal. No one can understand human nature, no one can form a true conception of the origin of language who does not clearly see that, for a time, every human individual, and therefore the ancestors of the human race themselves, were without language, without reason, and, so far, mere animals, till they made that small step of using the clamor concomitans of their social

Is man a species?

occupations as a clamor significans, and thus entered on that loop-line which, though at first diverging by an almost invisible angle only, carried them in the end to a destination which no speechless animal can ever reach.

If Darwin says that man was an animal, I answer No, man is an animal. If Darwin says man is descended from a monkey, again I answer No; not because it seemed an indignity, or, as some people thought, a heresy, but because the descent of the breed man from the breed monkey has never been proved. It was a mere imagination, arising from an inaccurate use of words. Drop species, as a used-up word, and all becomes clear and simple. There are no species in nature, unless we foist them in. Our mistake of seeing in nature species, whether few or many, arose from the wrong use of the word species; our true intelligence of nature and of the purely genealogical relationship of all its productions returns as soon as we throw away the false word εἶδος, and replace it by the true word γένος, as soon as we use the right spectacles, the right words, the right concepts.

Definitions.

The advance of true philosophy depends here, as everywhere, on a true definition of our words. They want constant defining, refining, correcting, and even removal, till in the end the most perfect language will become the most perfect philosophy.

Definition and History of Words.

The best, perhaps the only sufficient definition of a word is its history, but to give a complete history of the words which form the staple of our philosophy is beyond our powers. There have been so many revolutions, so many breaks

and long pauses, in the history of every word, that only under exceptionally favorable circumstances is it possible to unite once more the broken and scattered links of what was once a continuous chain. We must be satisfied therefore with discovering the meaning which the principal leaders of thought assigned to the classical term of our philosophy, and if we do that, it is wonderful to see how many clouds vanish at once from our mental horizon.

The meaning of a priori.

Let us take the question which forms one of the oldest as well as one of the latest problems of philosophy, namely, whether some of our knowledge is a posteriori, some a priori; that is to say, whether all our knowledge is derived from experience, or whether we possess some knowledge which is not supplied to us by the senses alone. It seems a very simple question which everybody ought to be able to answer. We all possess the same information on the subject, and there is no bias, political, religious, or otherwise, to warp our judgment. And yet, as long as the world exists, or as long at least as men have thought about the world, there have been two parties standing face to face to each other, the one maintaining that we can possess no knowledge except what the senses deliver to us, the other asserting that we do possess some knowledge which the senses could never have delivered to us.

The chief reason why such a distinction was made was no doubt the peculiar quality observed in certain portions of our knowledge. Whatever our sensuous experience taught us could only be matter of fact, something actual, never something necessary or universally true. Yet our experience seems to supply us with certain truths which we not only assert as

actual, but as necessary. Besides asserting, for instance, that a straight line from one house to the house opposite happens to be the shortest, we likewise maintain that it must be so.

A priori and a posteriori knowledge.

As therefore experience can never yield necessary or universal truth, and as some of our knowledge claims that character, it was concluded that some of our knowledge could not be derived from experience. While the former kind of knowledge, that derived from sensuous experience, was called a posteriori, the latter received the name of a priori knowledge, and these two ill-chosen names have become the source of endless misunderstandings. Nothing could be said against the name a posteriori, if it is defined as knowledge following on the action of our senses. But the name a priori was supposed to imply a great deal more than a mere negation of a posteriori. It was explained as knowledge born with us, and therefore called innate, existing in our mind before we became conscious of anything. Other philosophers took it for knowledge slipped into our mind at a later time, but found there ready made, and therefore not to be questioned; while some authorities called it absolute knowledge, the truth of which is seen by intuition, and requires no further proof.

The amount of philosophical literature on the subject of innate ideas is enormous, yet the original question remains the same in all its simplicity, Do we or do we not know anything except what we see and hear and touch? or, as Locke put it, "Is there nothing in the intellect that was not formerly in the senses?"

Before I proceed to show how the Science of

Thought is able to deal with this old problem, it will be useful to look back to the last battle in which this controversy has been fought out in England. Though that battle itself is now almost forgotten, its issues still sway the destinies of philosophical thought in this country, nor have the two opposite parties been able since to send more skilful and powerful champions into the field than Mill on one side, Dr. Whewell and Sir W. Hamilton on the other. Mill's views in particular have exercised and continue to exercise so wide an influence among students of philosophy in England that it is difficult to treat the question of a priori knowledge properly, without referring to the state in which he left it.

Mill and Whewell.

There are a few preliminary questions to be settled first, questions on which there is really no difference of opinion between Mill and his opponents, though Mill seemed to think that there was.

Truths a priori may perfectly well be called by that name, though they are first discovered by observation or experience. It is after they have been discovered that the difference between knowledge dependent on observation, and knowledge entirely independent of all observation, comes to be perceived. No one denies that the truth of the axiom, "Two straight lines cannot enclose a space," even if evident independently of experience, is also evident from experience.[1] I should even go a step further, and say that all a priori knowledge becomes first evident by experience, and may yet be called a priori, because its truth is perceived from the first moment when the meaning

A priori knowledge is also a posteriori.

[1] Mill, *Logic*, ii. 5, 4.

of a proposition is apprehended, and without any necessity for verifying it by repeated trials, as is requisite in the case of all other truths ascertained by observation.

A posteriori knowledge not always sensuous.

And while this small triumph, that all a priori truth is first realized a posteriori, will readily be allowed to Mill and his followers, they probably would not object to an equally easy triumph claimed by the other side, namely, that much of what is claimed by them as the result of sensuous experience, can never come within the cognizance of the senses at all. In the case of two straight lines not being able to enclose a space, actual ocular inspection is altogether unattainable. We never see a point, or a line, or a plane, much less two perfectly straight lines.

But these are both purely forensic arguments, which no true philosopher would condescend to use. If we are once driven to such devices, we might say that on this earth two straight lines, if continued all round the earth, would inevitably enclose a space, as the tropic of Cancer and the tropic of Capricorn enclose the tropical region. But that is not what is meant. If there can be no true plane on our globe, we are quite satisfied with imaginary planes, and we are quite willing to accept mental instead of ocular or real lines, without insisting that therefore certain qualities of straight lines must be known a priori, because they cannot be known a posteriori. Dr. Whewell, it is true, was unwilling to make that concession. "It does not appear," he wrote,[1] "how we can compare our ideas with the realities, since we know the realities only by our ideas." But he had

[1] *Philosophy of Discovery*, p. 289; Mill, *Logic*, ii. 5, 5.

stronger arguments in store, and a case is weakened rather than strengthened by plausible arguments which may irritate, but can never convince.

Dr. Whewell's real position was this, that an a priori or, better, a necessary truth is a proposition the negation of which is not only false, but inconceivable.

Whewell's definition of a priori.

Mill attacked this definition by attacking the term inconceivable, and as a mere pleader he certainly seemed very successful. He found no difficulty in showing that in ever so many cases what seemed inconceivable to one generation has become perfectly conceivable to another. He instanced the Antipodes, the Copernican heliocentric hypothesis, the Newtonian doctrine of gravitation, rejected even by Leibniz, etc. He represents therefore the conceivableness or inconceivableness of such theories as purely accidental.

Mill's objections.

A later writer, who has since exercised a considerable influence on philosophic thought in England, Mr. Herbert Spencer, followed Mill in considering axioms our earliest inductions from experience, but he fell back on Dr. Whewell's test, declaring in almost the same words that "the inconceivability of its negation is the test by which we ascertain whether a given belief invariably exists or not." Still this leaves the real difficulty, pointed out by Mill, untouched, namely, that men differ as to what is conceivable or inconceivable. Mr. H. Spencer himself declares several things to be inconceivable which, as he well knows, have been considered as perfectly conceivable by some of the greatest thinkers the world has ever known. "We cannot," he says, "for instance, by any effort, conceive the ob-

H. Spencer's compromise.

jects of thought as mere states of our mind, as not having an existence external to us;" and yet it is no secret that some of the greatest philosophers of the world have embraced that view as the only conceivable one. He likewise declares that he is unable to conceive gravitation acting through empty space, an inability which caused no small surprise to Mill.[1] In spite of all this, however, Mr. H. Spencer writes that "though men have mistaken for inconceivable things some things which were not inconceivable, nevertheless the inability to conceive the negation of a thing may still be our best warrant for believing it." Besides,[1] universal and unchanging facts are, by the hypothesis, certain to establish beliefs of which the negations are inconceivable, whilst the others are not certain to do this, and if they do, subsequent facts will reverse their action. Mill, of course, could not be moved by such arguments which, as he well knew, did not touch the real nerve of the problem. He also remarked, and from his point of view very truly, that "if our incapacity to conceive the negation of a given supposition is proof of its truth, because proving that our experience has hitherto been uniform in its favor, the real evidence for the supposition is not the inconceivableness, but the uniformity of experience." "Why," he says in another place, "should the truth be tested by the inconceivability, when we can go farther back for proof, namely, to experience itself?"

H. Spencer's later view.

Mr. Herbert Spencer seems to have felt the weight of this remark, if we may judge from his later writings, in which he substitutes for "beliefs which invariably exist," "cognitions of

[1] *Logic*, ii. 7, 4. [2] Ibid. ii. 7, 2.

which the predicates invariably exist along with their subjects."[1] In this he approaches very near to Professor Bain's view, who writes,[2] "We required concrete experience in the first instance to attain to the notion of whole and part; but the notion, once arrived at, implies that the whole is greater. In fact, we could not have the notion without an experience tantamount to this conclusion." . . . When we have mastered the notion of straightness, we have also mastered that aspect of it expressed by the affirmation that two straight lines cannot enclose a space.

Mill's Repetition of Experience.

Mill's position, however, remained unshaken, and this position has at least the great advantage of being clearly defined. According to him, all our knowledge is due to a posteriori or sensuous experience, and the difference between this and what people call a priori or apodictic knowledge is to him one of degree only. It is simply, he thinks, because we have seen the latter class of truths more frequently than the former that we have greater faith in it.[3]

Three kinds of knowledge.

What has the Science of Thought, based as it is on the Science of Language, to say to this? It admits the fact that there are two kinds of knowledge, the one actual, the other necessary, and that there is a third kind, namely, the possible.[4] There is no difficulty about our knowledge

[1] *Logic*, ii. 7, 4.

[2] Ibid. ii. 5, 5.

[3] Ibid. ii. 5, 4.

[4] Kant calls these three kinds of Knowledge assertory, problematical, and apodictic, as conveying the actuality, possibility, or necessity of the propositions in which our knowledge is conveyed. See Kant's *Critique of Pure Reason*, translated by M. M., vol. ii. p. 71. Actuality would be a better rendering for Dasein than Existence.

of actual and possible things. Every one admits that it is taken from experience. But with regard to necessary or universal truths, the Science of Language shows that an important distinction has to be made.

Analytical and Synthetical Propositions.

Some of these so-called apodictic truths are simply analytical, or even tautological judgments, the name of the predicate being no more than a paraphrase of the name of the subject, as when we say, "All islands are, or all islands must be, surrounded by water." Here we learn nothing new. In other analytical propositions, such as "All gold is, or must be, metal," the name of the predicate tells us even less than the name of the subject, because the name and concept of the former is contained in the name and concept of the latter, and the name of gold has a fuller intension than that of metal. These judgments, which teach us nothing new, are called analytical, because we have simply to analyze the name of gold, to discover that it implies or connotes metal; we have simply to find the etymology of the name of island, in order to find that it means land surrounded by water. If we found that what we called an island was on one side connected with the mainland, we should at once change the name, and call it a peninsula or a promontory.

But if we say the straight line is and must be the shortest, the predicate does teach us something new, and yet this new piece of information is believed to be universally and necessarily true, nay, to follow by some kind of necessity from the nature of the subject. This class of judgments is called synthetical. How then do we get this kind, or rather this quality of knowledge which is conveyed in certain

synthetical propositions? The matter, no doubt, comes to us from experience always. Without our eyes we could see no line, whether straight or crooked, whether short or long. But the apodictic form of this kind of knowledge cannot come from experience, because our senses, though they may tell us what is, what has been, or what may be, can never tell us what must be.

Mill's facts.

Mill, as we saw, has but one explanation; the more frequently an observation is repeated, the stronger grows our faith, till at last it seems to be beyond the reach of doubt. Here we have, first of all, to examine his facts. There is hardly an event which we observe more frequently and with greater regularity than the rising of the sun. Still if our friends were to tell us that on any day the sun had failed to rise, though we should be staggered, we should nevertheless look out of window in order to verify their assertion. But if our friends were to tell us, "Come out, there is a straight crossing from our door to the opposite door which is much longer than a crooked crossing," or, "Look at these two perfectly straight streets which enclose a square," does Mill believe that we should stir to verify such statements? And yet we have looked far more frequently at the sun than at the crossings of our streets, or at any cross lines, whether straight or crooked. Mere frequency of observation, therefore, would hardly account for our ability to conceive that the sun some day may not rise, and our utter incapacity to imagine that a straight line should ever be longer than a crooked line between the same points. No one, I believe, would even measure a straight line in order to convince himself that it was really

shorter than a crooked line. No one would appeal to the mere evidence of the senses, for he would feel that there was a higher kind of evidence to appeal to, even if it were no more than what Professor Bain describes so well by saying "that the mastery of the notion of straightness is tantamount to the mastery of the truth that the straight line is the shortest."

Still Professor Bain's explanation is after all but a repeated statement, slightly varied, of the fact that has to be explained. What we want to know is not "that the mastery of the notion of straightness is tantamount to the mastery of the truth that the straight line is the shortest," but why it should be so.

We know in names.

In order to answer that question we must go back once more to the original formation of our concepts and our words. We must remember that we know nothing except what we can name, or that all the materials of our knowledge are concept-names. What we know is never the thing, apart from us. Of that we cannot know anything. Our whole mental property consists in names, in nomina or notae rerum, not in res. Till we see this clearly, till we give up all hope of ever knowing the things by themselves, that is, the things as not known by us, we shall never come to an understanding with ourselves or with others. We think in names, never in things; that is the end of all true philosophy.

Names imply more than one attribute.

We must remember next, that every name was originally a proposition in which one attribute, as expressed by a root, was localized. "Striking-here" was the beginning of striker or hammer; "melting-here" of snow; "shining-here" of bright.

In all such names, however, as snow (melting-here), sun (shining-here), etc., ample room was left for other attributes, nay, some of these attributes, though not actually expressed by the name, were considered of so much consequence that their absence would render the employment of the name impossible. Nothing, for instance, would be called snow, simply because it melted, unless it was at the same time rain-water frozen in falling from the clouds to the earth. Nothing would be called sun, simply because it was brilliant, unless it was at the same time a ball apparently rising every morning in the East, and setting every evening in the West, or, as we call it now, the centre of the solar system. Such attributes as would render the employment of certain names impossible, we call constant and essential attributes. They constitute the real intension of a word, and gives us its more or less perfect definition.[1] As we know in names, and as all names depend on certain essential attributes, our knowledge and particularly its quality depend on these essential attributes as embodied in our names. And as by choosing a name we declare that we shall not name or know anything by it except what possesses certain constant and essential attributes, we are enabled to make certain so-called essential propositions, which approach very near to universal or apodictic propositions. We are enabled to say, for instance, not only that man is rational, but that he must be rational, because otherwise we should not call him man. This may be sneered at as "merely nominal" knowledge, but we are never told where any but nominal knowledge is to be found.

Names depend on essential attributes.

[1] That definition must be progressive is admitted by Mill, *Logic*, iv. 4, 3.

Sometimes, however, not only did one name imply a number of essential attributes, but different names were formed and applied to the same thing, each attribute serving as the foundation of a new name. Such names might be predicated of each other just as adjectives are of substantives. We may say, for instance, that every soldier (lit. a man who receives pay) is a warrior, every warrior a combatant, every combatant a campaigner, and so on. The character of the proposition remains the same as if we used an adjective.

Separable and inseparable attributes.

The question then arises, Why is it impossible to tear away certain predicates from their subjects, while others can easily be separated? We can easily separate from gold its being dug out, for some gold is found on the surface; we can also separate from it its glittering color, for some ore of gold does anything but glitter when it is found. But we cannot separate from gold its being ductile. And why? Simply because we have chosen so to frame our name gold that anything not malleable cannot be called by it, but will have to be called by a different name. Thomas Aquinas knew this when he said, Verba sequuntur non modum essendi qui est in rebus, sed modum essendi secundum quod in cogitatione nostra sunt. We are responsible for our names. For instance, as our name for man implies the faculty of speech, we can say with apodictic certainty that every man must be able to speak. At first, the knowledge that man speaks rests on experience only, but our experience has been so organized in names that we have made the name "man" inapplicable to anything that cannot speak. We are

Essential attributes.

justified therefore in saying not only that "all known men are able to speak," but that "all (whom we should call) men are able to speak." When we use the word man, we mean no longer this or that individual, but any being which deserves the name of man, and of which we can predicate, not only what the name man implies etymologically, namely thought, but likewise everything on which we have made that name to depend, namely life, speech, reason, and all the rest. What that being, called man, is, apart from our name, we do not know, nor shall we ever know more of it than what we have put into its different names. Supposing, therefore, we should meet with a man who could not speak, we should say, in the case of an infant, "he cannot yet speak;" or in the case of a man whose tongue had been paralyzed, "he can no longer speak;" or in the case of a person born deaf and dumb, "he is a man who would have spoken, but for some physical malformation." We should retain for all the name of man, but we should deny it to the gorilla, though the very image of a man, for the simple reason that the name man implies or connotes something which the gorilla does not possess, namely speech. So again, as we call the same x which we mean by man, by mortal also, we may say with apodictic certainty, "All men are mortal." If therefore we should hear of a man who, like Romulus, did not die, but was carried up to the gods in heaven, we should take away the name of man from him, because we use that name on condition only of the subject to which it is applied being mortal.

If we say that man is immortal, we enter into quite a different sphere of thought. Immortal here does

not mean that a man does not die or that his body does not decay, but that there is something in him which does not altogether perish; it means, in fact, that his soul is immortal, though his body is mortal.

But taking mortal in its ordinary sense, what we mean by saying that man is mortal is that mortal is an attribute that cannot be torn away from man, and which we may safely predicate of all men, because if they ceased to be mortal, they would cease to be called men.

Accidental attributes.

But let us suppose that all men were white, or, that we at least, living on an island, had never seen any but white men. In that case the statement, "all men are white," would seem to be as true as "all men are mortal." And yet there is a great difference. We might accept white as an attribute of man, but we should hardly make the name of man dependent on it. If therefore we came to know beings, in every other respect like unto men, only their skin being black, we should call them black men, while we should never apply the name of man to them if, however like us in all other respects, they were not mortal or not endowed with the faculty of speech.

And here we see the true meaning of what logicians call essential attributes, but which I prefer to call nominal, using that word in the very opposite sense of that which scholastic philosophers assigned to it. By nominal attributes I mean those by which a name stands or falls. They constitute what logicians call the peculiar property of a thing. Take away, for instance, the nominal attribute four-footed, and the name of camel vanishes. But take away the attribute with two humps, and the

name remains. What we find therefore as the result of our inquiry is this, that what I call nominal attributes cannot be separated from their subject, while all other attributes can. Names, no doubt, may be changed. Attributes which seemed to be essential may in time be dropt, and new essential attributes may be discovered. This is due to the progress of science, though we should never forget that the true progress of science must always be realized in names. That being so, it will easily be understood, that all nominal propositions are liable to one and the same limitation to which all experience is liable, namely, "so far as we know," or "in this present state of ours." No conviction can well be stronger than that the sun will rise in the morning and set in the evening, yet even that proposition, as we saw, is liable to the limitation inherent in all human experience.

So far, therefore, the results obtained by the Science of Language would serve to confirm Mill's view, that all our knowledge is derived from our senses, and that the degree of assurance with which we predicate any attributes depends on our experience. In the case of accidental attributes, this admits of no doubt. In the case of nominal attributes, however, Mill is under the sway of the old illusion that "names and their signification are entirely arbitrary,"[1] while we have seen that nothing is less arbitary than names and their signification. They embody the historical outcome of all the knowledge which the human race has accumulated by centuries of honest toil. To call a nominal proposition such as "All men are rational," arbitrary, seems to me like committing philosophical suicide. For all practical

[1] *Logic*, i. 6, 1.

purposes such a proposition may be called almost apodictic and universal; for not only would the name of man have to be entirely surrendered, if we separated from it the attribute rational, but, in this case, all human reasoning would come to an end. Nor is there any excuse for saying that such a proposition as "All men are rational" is only analytical, for before we could form such an analytical proposition, we must have made the synthetical proposition that this man and that man, and, at last, that every man is rational. We cannot take out of a name anything beyond what we have put into it. Our making "rational" a nominal attribute of man is in the first instance an act of synthesis, though not of arbitrary synthesis, for the very first reason why such a name as man (m a n - u - s) was framed at all was the wish to express our knowledge that "here there is thought" (m a n - u - t e).

Unconditional Truths.

We have now, from the point of view which we have reached, to approach the question, Can we form synthetical judgments without any limitation, or judgments professing to be necessarily and universally true, and depending for their truth, not on experience only, however often repeated, but on some authority higher than, or according to the usual, but rather objectionable terminology, prior to all experience?

Kant has shown that we find such knowledge, first, in what he calls the forms of sensuous intuition, Space and Time; and, secondly, in the categories of the understanding. If he had expressed himself in simpler language, few people would have hesitated to accept his conclusions.

We all know that mathematical knowledge claims

the character of necessity and universality, both in geometry and in arithmetic. In geometry such statements as the straight line is the shortest, two straight lines cannot enclose a space, or even two things cannot be in the same place at the same time, though they may be perceived for the first time by the senses, possess a greater certainty than any number of repeated acts of experience could ever give us. They are more certain than that the sun will rise to-morrow. Space, therefore, and all that is connected with space, cannot be mere matter of experience. As all experience is possible in space only, space cannot be the result of experience; and though I can conceive all that fills space and is the result of experience, as gone, I can never conceive space as gone, because it is itself not the result of experience. And what applies to space applies to time. Time also is presupposed in every experience, because nothing could be the object of experience except as existing either at the same time or in succession, nor is it possible to imagine time as gone, though everything that has happened in time is gone. Arithmetical statements, being founded on counting successive units in time, are as certain as geometrical statements. Arithmetics may be called the Science of Time, as Geometry is the Science of Space. Mathematics.

If, with Kant, we call the geometrical statement, that the straight line is the shortest, a synthetical judgment a priori, we produce the impression, which is utterly erroneous, that such a judgment could be made prior to all experience. This shows the mischief which is constantly done by ill-chosen words. It is quite possible that two persons fastening a rope between two poles would see that the

straighter they pull it, the shorter length of rope is required. They might then simply state an observation made by them for the first time, that this straight rope, as we now hold it, is the shortest. But if that fact is once known, it would not require any repetitions to make it more certain in our eyes than any fact, however many times it may have been repeated.

It might be said, however, that "shortest" is only a nominal attribute of "straight line," and in a certain sense this is true. We should not call a line straight, unless it was also the shortest. But this is very different from saying that we should not call an island island, unless it was surrounded by water; or gold gold, unless it was a metal. Shortest cannot be called in logic the higher genus of straight, nor straight of shortest; and while, when we assert the fact that an island must be surrounded by water, we must in the end appeal to experience, we distinctly decline to appeal to experience in order to prove that the straight line is the shortest.

It is true, no doubt, that, like all truths, this class of apodictic truths also exists for us only after it has been named and clothed in language, and that some of these truths have the appearance of tautological truths. If straight line were expressed by linea directa, and short line by linea directa, the statement that linea directa=linea directa or directissima would seem to be a tautological repetition. Still, though straightness and shortness may be but two aspects of the same thing — straightness being in space what shortness is in time — and though they might have been named by the same word, they are two aspects, and to know that they are so, requires some kind of synthesis, if only a synthesis of intuition.

That synthesis of intuition, however, is not enough to give us knowledge, and whereas Kant tries to explain all that we know about space and time as the immediate result of sensuous intuition, I cannot admit any kind of knowledge that has not passed through the phases of concept and name. There might be ever so many lines, straight, crooked, short, long, they would be nothing to us, if simply seen, and not conceived and named. Again, a hundred would never be a hundred by mere sight; we must count it and name it.

Attempts have sometimes been made to prove these geometrical and arithmetical truths, which are nothing if they are not self-evident, but all such proofs are simply tautological. There are no higher truths to which these truths could be referred, and by which they could be confirmed or disproved. We might attempt to prove that the straight line is the shortest by saying that if it ever went out of its way it would lose time, and therefore lose space. But this is no more than repeating that a straight line does not lose time or space, and is therefore what it is, namely the shortest. And by what higher truth could we prove that it is impossible for two straight lines to enclose a space? We see that it is so, even without using our eyes, but we cannot prove it by any independent standard. It has been said that every rectilinear figure must have as many angles as sides, and as a triangle is the simplest figure or mode of enclosing space by straight lines, no figure could have less than three sides. It has also been argued that space is a general abstract term, derived from triangles, quadrangles, and other figures, and that as none of these consists of less than three sides,

space in general too cannot be enclosed by less than three sides. But all this is only repeating one and the same fact, a fact which is above proof, because it is the result of what we are ourselves, a necessity to which all experience must submit. If we call these local and temporal intuitions a priori, we mean nothing innate or cognate, nothing mysterious, but simply the sine qua non, the very essence, of all sensuous perception.

Categories of the understanding.

And what applies to these necessities of intuition, applies likewise to the necessities of our understanding. Here, too, we mean by a priori truth simply truth which cannot be explained a posteriori. Experience, like a quarrel, requires two, a receiver and something that is received. Now we receive what is given on our own conditions, and what these conditions are we can only discover by separating in our knowledge what can be and what cannot be the result of experience. If the qualities of space and time, as we saw, cannot be the result of experience, because without these two forms, no experience would be possible, neither can the categories of our understanding, for without them we should understand nothing.

Causality.

The most general and the most important of these categories is that of Causality, or of sufficient reason, which was expressed in scholastic Latin by the well-known maxim, Nihil est sine ratione cur potius sit quam non sit. That this cannot be a conviction acquired and strengthened by experience is best proved by the fact that our creation of the very first object, or our intuition of an objective world, would be impossible without it. All that is given us consists in affections of

the senses. It is we who at once, and without any wish or will of our own, change these affections into objects by which they are supposed to be caused. We do this in the very act of naming. The sensation is there, say of bitterness. As soon as we become conscious of it, we say "it bites," and the it is the object which we postulate and create for ourselves.

And what applies to the first acts of our mind, applies to every subsequent act. As we believed that everything must be in space (side by side) and in time (one after another), so we believe that there can be no break or void anywhere, but that everything must be caused and causing. In this general postulate we cannot be wrong, however wrong we may be in assigning certain causes to certain events.

We see a dewdrop in the morning, and after a time we see that it has vanished. We do not know how, but whatever torture we may apply to our mind, we can never bring ourselves to say that it vanished without a cause. The wind may have swept it away, the sun may have dried it, a bird may have drunk it, but something must have happened to account for the change. What is the true cause, depends on observation. The sun may have risen, and the dewdrop may have vanished, but that need not be more than a succession in time, a post hoc, not a propter hoc. The same applies to the wind and the bird. But as soon as our senses tell us that there was no bird, and that there was no wind, nor any other agent to produce the change, then the post hoc of the vanishing of the dew and the sun's rays becomes to a human being at least a propter hoc, and the craving for causality is satisfied.

But even if we could not determine which was the

real cause of the vanishing of the dew, we should nevertheless postulate the existence of a cause. We cannot yet account for the changes of weather, but we are as convinced that there is a cause for them as that the sun is the cause of daylight. To say that all this is nothing but a mental habit, is to admit that our mind is capable of forming such habits because it is what it is, and not a mere mirror. Why should our mind not be satisfied with the post hoc? The world would be very orderly, if everything happened in succession, without any causal link. Whence, then, that craving for something more than the senses give us, whence the concept of a propter hoc, whence the belief in cause and effect? Experience never tells us of a cause; our mind, even in spite of experience, always postulates a cause. According to what rules of reasoning, then, are we to say that cause is the result of experience?

If anywhere the influence of what Mill calls intellectual or even moral bias may be seen, it is here. Mill's school prides itself on having explained ever so many most complicated processes of the mind by association, and who would deny the excellent work which that school has done? But having found that this key could open so many secret drawers, Mill and his followers seem to consider it almost as an insult, as a reflection on the whole system of their philosophy, if a single drawer should be left which they cannot open. In this respect they differ from Kant and his followers, who, though gladly availing themselves of the help which experience and association furnish for the solution of mental problems, point to the fact that experience cannot be explained by experience alone, but requires some, though very few, antecedents.

It has become the fashion, even among some of Kant's most loyal followers, to treat the other categories as of less consequence than that of causality, or to surrender them altogether as a priori forms of thought. Now it is quite true that the category of causality is the most important among categories, just as that of οὐσία is among Aristotle's, but I do not see how we can account for our intellectual activity without presupposing the other categories likewise. The other Categories.

Whatever is given us in our sensation cannot be conceived and cannot be named except as one, many, or all. Anything that does not submit to one of these categories has no existence for us. Here we have Kant's categories of Quantity.

Again, if we cannot conceive what is given us except as either cause and effect, neither can we conceive anything except as either substance or accident, or as acting reciprocally. Anything which does not fall under one of these relations, is outside our ken altogether. Here we have Kant's categories of Relation.

Once more, we cannot conceive what is given us except as either actual, possible, or necessary. Anything outside this threefold purview is nowhere, so far as we are concerned. These are Kant's categories of Modality.

Lastly, we cannot form any proposition with regard to the objects that fall under these nine categories, except by affirmation, negation, or limitation — Kant's categories of Quality.

Whatever else these twelve conditions may be, whether they be necessary forms of all existence or not, they certainly are necessary forms of everything

that is to be thought and named by us, of everything which we make objective to ourselves; and therefore they too, like the forms of sensuous intuitions, must be called a priori, or not only a priori, but eternal.

Mill's Categories.

Mill thinks he can reduce all these predicates to four, Existence, Order in Place, Order in Time, and Resemblance. Existence, no doubt, is the most important of all categories, which Aristotle puts first, and Schopenhauer, under the name of causality, first and last. Order in Place and Time would correspond to Kant's forms of sensuous intuition, while in predicating resemblance we are simply grouping things as one, many, or all (Kant's categories of quantity), which, according to Mill's followers, is the foundation of comparison and indirectly of all reasoning.[1]

Causation, which Mill at first mentions as a fifth predicate, is afterwards treated by him as not different from what he calls order of time.[2]

The question how we came to predicate these four or five categories, is never asked by Mill, but he evidently thinks that all these predicates, like everything we know, are the result of repeated experience. And yet can we imagine any experience unless to a recipient who can distinguish between one and many, subject and predicate, cause and effect? If, as Mill declares, there is really no difference in our sensations of substances and predicates, why then should our sensations ever grow out of this chaos? Why should we begin to count, which no pure mirror does? Why should we postulate a substance, which we see nowhere? Why should we be convinced that causal-

[1] On the true meaning of resemblance, see Noiré, *Logos*, p. 72.
[2] *Logic*, iii. 24, 1.

ity, and not only succession in time, holds the whole of our experience together, considering that mere experience never tells us that it does?

We have thus seen that the Science of Thought, supported, as it is, by the Science of Language, solves the riddle of a priori knowledge in a way that ought to satisfy all parties. It shows that all our propositions refer to names, that is, to what we know of things, not to what things are, as not known by us. It likewise shows that our first synthetical judgments mean no more than that two different names are applicable to the same thing, as, for instance, "this man speaks," but that, after a time, certain names are made so dependent on others that nothing, for instance, is to be called man that does not speak. This is the highest degree of certainty that can be attained from experience, and if I call that certainty nominal, and the attributes to which it refers nominal, not essential, it is because I think I have shown that nominal is the last and highest form which our knowledge can attain. Yet all this knowledge is a posteriori, and, if analyzed into its component parts, cannot in the end appeal to any certainty higher than what is supplied by the senses. The only judgments which are not a posteriori, though suggested at first by the senses also, are the geometrical and arithmetical propositions, the law of general causality, and such deductions as can be made from the categories of our mind, as, for instance, Everything must be either one, or many, or all, must be real, possible, or necessary, must be affirmed, or denied, or limited. For the truth of these statements we have not to appeal in the end to experience, on the contrary, all experience depends on

them, and in this sense only may we call them a priori, necessary, universal truths.

Mill's transcendent views.

I can hardly doubt that, with these limitations, Mill himself would have accepted what we call a priori truths, for what he has to say against the infallible character of these truths, strikes me as opposed to the principles of his own philosophy. Mill appeals to what must forever be outside the limits of our experience, in order to show that our a priori truths which, though confirmed by all experience, we consider true, independent of all experience, may, after all, not be true. Now here I would remark, once for all, that everything we are thinking must be thought of as within the limits of our mind and our senses. What is true within that sphere, limited though it be, is to us, as limited beings, absolutely true. To say that the shortness of a straight line may not prevail outside the solar system, conveys to me no meaning at all. To say that there may be a world in which the law of causation does not assert itself, seems to me no more than to say that there may be a madhouse. We may safely leave such speculations to the believers in four dimensions of space. I know that there is a horizon of our knowledge, but I know equally well that, being what we are, we cannot jump over it, nor even suggest such doubts as Mill suggests.

I believe that Mill never understood the small demands which Kant really made in claiming for the forms of intuition and for the categories of the understanding the name of a priori. Kant ascribed no mysterious character to them, he did not commit himself to any opinion as to their origin. He simply said, Here they are with a character of their own,

which is different from that of all our other experience. That the same thing cannot be in two places at the same time, that two things cannot be in the same place at the same time, that the whole is greater than a part, that two and two make four, that everything must have a cause — all these are facts commanding assent such as no other facts of mere experience, not even the daily rising of the sun, can command. No doubt, if we say with Hume, that experience can never give us necessary truth, and that the law of causality rests on experience, we can only conclude with him that therefore the law of causality is not a necessary truth. But in that case we must give up all reasoning, including Hume's own reasoning against causality.

I admit that the name a priori, if taken in its etymological sense, is misleading, and I can quite understand why this name, as well as innate, cognate, absolute, transcendent, should excite the intellectual, and even the moral wrath of the empirical school. It seems to them as if, by admitting anything beyond experience, anything a priori, we attempted to raise human nature beyond its proper level, wishing at the same time to open an inlet for other truths which claim a mysterious character and a superhuman authority.

But Kant is the very last person to encourage such philosophical or theological legerdemain. On the contrary, through the whole of his philosophy he insists most strongly that these a priori forms or antecedent conditions of knowledge have no authority whatever "except in and for experience." They must not be applied to anything except what the senses supply, and to use the category of causality,

for instance, in order to establish the existence of God is, according to Kant, a philosophical blunder.

Definition.

If only we could always remember the first intentions of our words, many philosophical difficulties would vanish. I know in Greek (οἶδα) meant originally, I have seen, and therefore I know. To apply such a word to our knowledge of causes, forces, atoms, and faculties would be a solecism, to apply it to God would be self-contradictory. We want another word, which should mean I have not seen and yet I know, and that is — faith.

> "We have but faith, we cannot know,
> For knowledge is of things we see."

Everywhere we are led to the same conclusion: if we want to think correctly, if we have any belief left in philosophy, we must look, first of all, to our names. If we think in names, our philosophy ought to be a constant Katharisis of names. In the ordinary business of life we cannot help taking our words, like our coins, at their current value, but when higher interests are at stake we cannot be too much on our guard against spurious or debased coins. When treating in our last chapter of propositions, we followed Euler's example in representing names by circles. But although this is a convenient process, it would be the greatest mistake to imagine that the intension of every name is really so complete, so perfectly defined as the planes enclosed by the peripheries of those circles. The outline of the extension of most of our names is very jagged and uncertain, the weight of their intension varies as they pass from mouth to mouth, till an accurate process of definition has taken place, and some authoritative declaration been made as to what is inside and what is outside a certain name.

Any student of language who knows in what haphazard way words are formed and afterwards made to do service for anything that the human mind requires, will not be surprised at the perfect maze in which even the best thinkers find themselves before they come to understand one another. How often do we hear people say, "Matter means this, and Mind means that," as if either Matter or Mind had any inherent meaning, or as if they could mean anything except what we ourselves or our betters wish them to mean. The whole of philosophy may be called a struggle between the new and the old meanings of words, and much philosophical controversy would vanish, if disputants would only condescend to define their words. But to be asked to define the meaning of words, has almost come to be considered as an insult. Nor is it any easy matter to do so at a moment's notice. But this, so far from being a reason why it should not be none, serves only to show how necessary it is that it should be done. In many cases much would be gained if disputants, even without giving a full definition of a word, would tell us at least to which of the Aristotelian categories they wish to refer it. I pointed out before (p. 245), how much misapprehension was caused by Mill when explaining Matter as "the permanent possibility of sensation," Mind as "the permanent possibility of feeling." Here, first of all, an artificial distinction is made between sensation and feeling, sensation being used in a passive, feeling in an active sense. It would have been easy and certainly clearer, if Mill had defined Matter as the permanent possibility of being felt, Mind as the permanent possibility of feeling. However, as Mill explains what he means

Necessity of definition.

by sensation on one side and feeling on the other, that might pass. The real mischief lies in the use of the word possibility. Is that word used under the category of οὐσία or not? If it is, then why not say, "Matter is what permanently makes sensation possible, Mind what permanently makes feeling possible;" or, better still, "Matter is what can be permanently felt, Mind what can permanently feel." This does not sound so grand, but it gives all that is contained in Mill's words, and gives it in a clear form.

I feel the same strong objection to Schopenhauer's use of the word Will. In no language is Will anything but the state or act of something else. It is predicate, not subject. Why then use that word to signify what is meant for the subject of all subjects, dependent on nothing, predicable of nothing? I do not contest the right of philosophers to assign to all words a new meaning, but to move a word from one category into another is a much more doubtful step, and, if taken at all, it should be taken with full notice, or with the sanction of that popular consensus against which there is no appeal. As Schopenhauer's Will is clearly taken from the Vedânta philosophy, why not retain Brahman, whether as a neuter or as a masculine, a word which some Sanskrit scholars have translated by Will, or, better still, Âtman, Self?

The odor of words.

It cannot be denied, however, that there is something in certain words which defies definition. There is a kind of odor about words which varies at different periods. It becomes most clearly perceptible when we compare the meaning which the same word assumes in cognate languages. Whoever has attempted translation from German into English, or from English into German, will know

what I mean. I do not think of such words only as wife and Weib, bride and Braut, maid and Magd or Mädchen. I mean words which change slowly from generation to generation till they come to mean almost the opposite of what they were originally meant to mean.

No title could be more honorable at first than was that of Sophistes. It was applied to the greatest thinkers, such as Sokrates and Plato, nay, it was not considered irreverent to apply it to the Creator of the Universe. Afterwards it sank in value, because applied to men who cared neither for truth nor for wisdom, but only for victory, till to be called a sophist became almost an insult. Again, what name could be more creditable in its original acceptation than that of Sceptic? It meant thoughtful, reflective, and was a name given to philosophers who carefully looked at all the bearings of a case before they ventured to pronounce a positive opinion. And now a sceptic is almost a term of reproach, very much like heretic, a word which likewise began by conveying what was most honorable, namely, a power to choose between right and wrong, till it was stamped with the meaning of choosing from sheer perversity what the majority holds to be wrong.

As all philosophy has to deal, first of all, with words, there is no salvation for philosophy except definition, that is, criticism of words. The very word philosophy may serve as an instance. How often do we read in German works on philosophy that men like Bacon and Newton, or in modern times Lyell and Darwin, are not philosophers at all. Schelling's joke about "philosophical instruments" is trotted out again and again. The fact is that since the days of

Descartes, and still more, since the days of Kant, philosophy in Germany has been used chiefly in the sense of Erkenntniss-theorie, knowledge of knowledge, ἐπιστήμη τῆς ἐπιστήμης. There is much to be said for defining philosophy in that sense, because whatever exists for us can only exist as perceived, known, and named by us, and therefore the foundation of all philosophy must be the exploration of the foundation on which all knowledge rests. It is the prima philosophia, and, according to some, the ultima philosophia likewise. As soon as philosophy is so defined, all the useless squabbles, whether, for instance, Auguste Comte and Mr. Herbert Spencer deserve to be called philosophers, would cease at once. The name might be good enough for Kant, "who extracts sunbeams out of cucumbers," but, if applicable to Kant, my friend Mr. Shadworth Hodgson would, I fear, reject it with scorn. Still there remains a lurking love for the name. People do not like to part with it, though it seems to have been so much degraded. A few students of mind-stuff might say, "If that is your definition of philosophy, we should rather not be called philosophers," but others would rather retain it, though with a new definition. Hence so many fights about the odor of a word, even when people care very little for the carcass from which it arises.

Verbal Fallacies.

Even Mill, with all his contempt for merely verbal knowledge, is quite aware how many of our fallacies are due to the nature of names. How is it that he has never asked himself, whether true knowledge can be due to any other cause? If we fall by our legs, do we not also walk by our legs?

And there are fallacies about fallacies too, and Mill seems to me by no means free from them. He con-

stantly uses words as if they could have one meaning only, whereas some have no longer any meaning at all.

When he says, for instance, that it is a fallacy to say that gravitation cannot act through empty space, the fallacy is his quite as much as his opponents'. Both he and his opponents take empty space as if it were a well-defined word which everybody accepts in the same sense. But empty space is so far from being a well-defined word that it may possibly turn out to be self-contradictory. Empty space meant originally no more than an empty room, a space emptied of all its furniture. After a time, when it became possible to exhaust the air, a space thus exhausted was called empty space, or a vacuum. But vacuum meant no more than without air, and it was simply a wrong induction to conclude that a space empty of air could not be pervaded by the vibrations of light or other invisible media.[1] Lastly, when empty space was defined, as it was as early as the days of Aristotle, as space without matter, a new element of uncertainty was introduced by the undefined name of matter. There is nothing in our senses or in our reason to authorize us ever to speak of space without matter, but if we once form such a concept, we have a right to deny what is contradictory, namely, that in a space where there is no matter, matter should act,[2] just as we can draw a formal conclusion that "a ghost being something which cannot be seen, therefore it is impossible that a ghost should be seen, for, if seen, it would cease to be what we call ghost."

Empty space.

1 *Logic*, p. 498 b.

2 Newton himself declared that it was to him inconceivable that inanimate brute matter should, without the mediation of something which is not material, operate upon and affect other matter without mutual contact.

We must in all our mental acts remain within the limits of our own senses, our own concepts, our own names. We cannot, as Mill constantly attempts to do, live at the same time as a chrysalis and soar about as a butterfly. With us matter cannot think, with us space cannot be empty, with us two lines cannot enclose a space, with us there cannot be a shorter line than the straight. If Mill says that all this may be merely "limitations of our very limited minds, and not in nature at all" ("Logic," v. 3, 3), it is difficult to see what this has to do with us. What is strange is that a philosopher of Mill's calibre should appeal to these superhuman realms of transcendental possibilities, of which even Kant would not dare either to assert or to deny anything. He seems in this respect more metaphysical than the most metaphysical of German metaphysicians. And that is no doubt the reason why he does not apprehend what Kant means by a priori forms of sense and thought. They are the forms without which we, poor mortals, can neither see nor think, and which to us are therefore what is called a priori, i. e. beyond the reach of a posteriori doubt. There may be worlds where space has four dimensions or none at all, where nothing is either substance or predicate, cause or effect, one or many, where everything that is possible is real, and everything that is real is necessary. But if that is so, it would seem to follow all the more that what subjects our present world to the limitations of space, time, and the so-called categories, must be our fault, whether we like it or not, must be inherent in our subjective nature, and thus become an irrevocable law of our objective world.

It has been asked, suppose that all were chaos, or

that we were suddenly transferred to the eve of the first day of creation, how would the law of causality apply? It would apply in two ways. Our mind would postulate order in chaos, and if it could discover none, the law would still be proved by the breach. We have only to abolish within ourselves the law of causality, and we are at once in full chaos and on the eve of the first day of creation.

Mill declares in one place ("Logic," v. 3, 3) that it is a mere fallacy to say that matter cannot think. Here again he ought to define, first of all, what he means by matter, and, according to his definition, it may or may not be a fallacy to say that matter cannot think. If we say that matter cannot think, we do not say so because we cannot conceive thought to be annexed to any arrangement of material particles. That is not our reason, for it would, on the contrary, be easy to answer that our experience never shows us thought except as annexed to some arrangement of material particles.[1] The reason why we are justified in saying, "matter cannot think," is our having in our language and thought separated matter from thought, our having called and conceived what is without thought matter, and what is without matter thought. Having done this, we are as certain that our matter cannot think as that A = A and not = B.

Matter.

Definition is therefore the only remedy which the Science of Thought can prescribe. That thought is often hide-bound in language, that its history is a constant struggle against effete words, that the record

1 "Nam ex eo quod considerari potest cogitatio sine consideratione corporis, inferre volunt non esse opus corporis cogitantis." Hobbes, *Logica*, i. 3, 4.

of its sufferings and diseases may be read in all mythologies, in all religions, and in all philosophies, all this is well known by this time. All honest philosophers have felt it, and thought they have soared high on the pinions of language, yet even in their highest flights their wings have always been a heavy weight. It is in the development of thought as in every other development; the present suffers from the past, and the future struggles hard in escaping from the present. Thought is a constant birth, and language a constant cry of agony: yet there is always new thought springing from old thought, and living words rising from the ashes of dead words. For better or for worse, language and thought are inseparably united: a divorce means destruction to both.

We saw how dear Bishop Berkeley forswore the use of words, but could forswear them in words only. Other philosophers, feeling how frail were the wings which their fathers had fashioned for them to fly, like Ikaros, toward the light of truth, were bold enough to think of throwing them away and of forging a new language for themselves. But they found it was more than mortal hands could achieve. Nevertheless, what Leibniz suggested, and what Bishop Wilkins carried out to a certain extent, a completely new philosophical language, would be the best cure for that malady of language which has afflicted our race as long so we know it, though even that could only give temporary relief. Aegri mortales is true here as elsewhere. Still we must not despair. As in medicine, so in philosophy, a right diagnosis of the disease is something. To know that we are ailing and why we are ailing often suggests the remedy. If we keep aloof from indigestible food,

and observe the general laws of health, we may live and work for some purpose. If we keep aloof from ill-defined words, and observe the general laws of thought, we may think and speak to some purpose. The Science of Language has shown us the wonderful structure of the organ of thought — the bones, the muscles, the nerves in grammar and dictionary. The Science of Thought is to the Science of Language what Biology is to Anatomy. It shows us the purpose of the organ, its work, its life. The two are really one. Yet in the progress of human knowledge the firm foundation had to be laid by the Science of Language, before it was possible to erect on it the new edifice of the Science of Thought, or to indicate at least how it might be carried out by those who will come after us.

APPENDIX.

THE FUNDAMENTAL CONCEPTS EXPRESSED BY SANSKRIT ROOTS.

Preliminary Remarks.

The Sanskrit roots in the following list have been given generally in that form in which we find them quoted by Hindu grammarians, leaving out the indicatory letters. Instead of the vowel *ri*, I have in writing the roots, employed the letter ṚR, though without changing its place in the alphabet. The letter ṚR has been used in roots which Hindu grammarians write with *ri*, that is in roots the vowel of which varies between ar, îr, ûr, and sometimes *ri*. In roots in which the nasal is variable, I have written it with a small letter, and have not allowed the nasal to count in the alphabetical arrangement of roots. Where the nasal is permanent, it has been written with a capital letter, and counts.

I have not added a final a to roots ending in consonants.

Having always defined a root as the last residuum of grammatical analysis, as that which remains after everything that can be shown to be the result of the formative processes of language has been removed, I naturally prefer the form in which Sanskrit grammarians have handed down their roots to us to that which some European scholars have lately adopted. From their point of view, I do not deny that much is to be said for calling, for instance, the root in p r a - b ú d h i (Rv. viii. 27, 19), at the awakening, in b u d d h á s, awakened, in b ó d h a t i, he knows, and in b a u d d h a, a follower of Buddha, BaUDH, or even BeUDH, and not BUDH. We then say that BaUDH is weakened, under certain circumstances, not that BUDH is strengthened. Consistency, it has been said, would require us, if we give BUDH as the radical form, to give PT as the radical form, instead of PAT, because in several cases where BaUDH appears as BUDH, PAT appears as PT, provided it be pronounceable. All this, and a great deal more, is perfectly true. But, on the other hand, if we mean by root that which can be reduced no further, BaUDH cannot claim that name, for BaUDH contains one element that can be removed, without destroying the life of the root. That element is not only movable, but seems to have a definite grammatical purpose. Grammarians may differ about the original purpose of Guṇa, which takes place when the accent falls on the radical syllable. It may be purely mechanical, but it may also, at least in the

beginning, have been intentional. Certain suffixes, still asserting their modificatory character, may have retained the accent, as a sign of that character; others, having ceased to be felt as modificatory, may have allowed it to fall back on the radical syllable. That accent, the udâtta, whether as pitch or as stress, may have provoked the strengthening of the radical vowel. Hence: —

Pres. VáID-mi, VáIT-si, VáIT-ti, but VID-más, VIT-thá, VID-ánti.
Perf. VáID-a (οἶδα), VáIT-tha (οἶσ-θα), VáID-a (οἶδε), but VID-má (ἶδ-μεν), VID-á, VID-úh.

In all this we seem to see cause and effect, the accent, if falling on the radical vowel, producing Guṇa, but leaving the radical vowel unchanged, if on the termination.

We have a still clearer instance in the formation of the degrees of comparison. Both comparatives and superlatives in îyas and ishṭha, for some reason which it is difficult to explain, throw the accent on the first syllable. Thus from kship-rá, quick, we have kshép-îyas, kshép-ishṭha; from ur-ú, wide, vár-îyas, vár-ishṭha, etc. The same rule obtains in Greek. The suffixes ra and u do not require the accent invariably, for we have gṛidh-ra (not gárdh-ra), greedy, by the side of kship-rá, quick; we have vás-u, good, by the side of ur-ú, wide. But there is no exception with regard to the accent of comparatives and superlatives (unless we think of gyeshṭhá), and it is but natural therefore to ascribe the strengthening of the radical vowel to one and the same cause, the accent on the first, as required by the suffixes îyas and ishṭha.

I do not say that these arguments are unanswerable; what arguments are, when we have to deal with the immense variability of language? All I maintain is that, according to our own definition of what a root is, namely that which resists further analysis, but, at the same time, is pronounceable, KSHIP has a better right to be called root than KSHaIP.

Those who maintain that the palatalization of initial gutturals was due to the influence of a following a, that is, e, would find it difficult to account for such forms as kopayati by the side of kup, for kup and kopati, except, of course, by analogy.

I have nothing to say against another argument, namely that those who give BUDH as the most primitive form of the root, should likewise give KṚI, and not KAR. But if Boehtlingk and Roth in their great Dictionary prefer to write these roots as KAR, everybody surely understands why they do so, and if we understand each other, why not allow a certain amount of individual freedom? I prefer to write such roots which may represent their vowel by ṛi or ar, with Ṛ; for instance, KṚ, BHṚ, etc., but as this is sometimes troublesome in printing, I am quite satisfied with either ṛi or ar. Granted that those who write BUDH, should write KṚI, what about such roots as RABH? I think it was Lepsius who first pointed out that nasalization is in every respect the same as Guṇa, namely a strengthening of the root under certain circumstances. Those therefore who write BaUDH and KAR, should likewise write RAMBH, because, under certain conditions, this and other roots are nasalized, e. g. Aor.

arambhi, Caus. â-rambhayati. They should write even BANDH, because this root also, as well as others of the same class, though it forms the Pass. badh-yáte, p. p. baddhá*h*, requires the nasal in the fut. bhantsyáti, where RABH would have no nasal. Nor do I see why TUD should be treated differently from BUDH, for, though not in the special tenses, it takes Gu*n*a in several of the general tenses, such as tot-syáti-tottâ, and even V*r*iddhi in átaut-sit. There are advantages and disadvantages on both sides.

And what applies to verbs, applies to nouns. Where we have nouns with two bases, Aṅga and Pada, or with three bases, Aṅga, Pada, and Bha, I always prefer to look upon the Pada-base as the most primitive; but if others prefer to begin with either the Aṅga or the Bha base, they might, no doubt, produce some arguments in favor of their views. My reason for preferring the Pada-base is that it appears in composition, at the beginning, in the middle, and at the end, e. g. pratyag-bhâva, mat-pit*r*i-dhanam, su-h*r*id, su-manas. We can understand that the terminations which have no accent (sarvanâmasthâna) might allow the base to be strengthened, as we see in pratyañk-as, h*r*indi, manâ*m*si, but we should hardly admit an original h*r*ind, manâ*m*s, or amp, because we find in the Aṅga-cases h*r*indi, manâ*m*si, and even svâmpi, possessed of good water, scil. tadâgâni.[1] Is there any reason why a root DVESH, if there is such a root, should as a noun be shortened to dvish (devadvit), or MARDH to m*r*idh, or YUNA*G* to yu*g* (asva-yu*g*)? And, if there is not, can the strengthening of yu*g* in the plur. neut. to yuñgi be regarded as anything but the result of the same almost mechanical process which changes h*r*id to h*r*indi?

What we have to remember when dealing with roots is that many of them exist under different forms. Some look upon these various forms as derived from one typical form, and as changed for a definite grammatical purpose. Others look upon these varieties as remnants of dialetic growth, though they admit that, after a time, such varieties were used more and more consistently for different grammatical purposes. Both may be right, though I prefer the latter view as the more comprehensive.

Roots like DHÂ appear weakened as DHÎ (θη and θε).

Roots like STHÂ appear weakened as STHÎ (στη and στα).

Roots like DÂ appear weakened as DÎ (δω and δο).

But, if certain scholars prefer it, and if they think they can explain the change of i to â, instead of â to i, they may look upon DHÎ, STHÎ, and DÎ as strengthened so as to become DHÂ, STHÂ, and DÂ, and in Greek on θε, στα, and δο as having been raised to θη, στη(ᾱ), and δω.

Other roots admit both of weakening and strengthening. Thus PAT is raised to PÂT and weakened to PT; A*G* is raised to Â*G*, and weakened to *G*; SV-AD is raised to SVÂD, and weakened to SÛD. Now, if corresponding to these three classes we have in Greek πέτ-ομαι, raised to ποτ-ή, and weakened to πτ-έσθαι; ἄγ-ω, raised to (κυν-)ηγ-ός, and shortened to ὀ-γ-μος (where ὀ is supposed to be not radical, but prosthetic); ὄζω, raised to ὀδ-ωδ-α, and weakened to ὀ-δ-μή (provided that here also the ο is pros-

[1] *Sanskrit Grammar*, § 211.

thetic), is it not preferable to use the middle form PAT, πετ, AG, ἀγ, AD, ὀδ, instead of either PÂT or PT, etc.?

If, however, DHI is a variety of DHÂ, STHI of STHÂ, there is this difference between this variation, and another, such as STHÂ and STHU, namely that STHU never replaces STHÂ to produce certain grammatical forms. We want STHU in order to explain derivatives such as sthûrá, sthávira, etc., but we never see it in such forms as sthitá, sthîyate, etc. The same applies to such parallel roots as DRÂ, DRU, SNÂ, SNU (ghṛ́ta-snâ and ghṛ́ta-snu, bathed in ghṛ́ta, i. e. dropping ghṛ́ta, Germ. triefend). Still this is no more than an historical fact, and there is no principle involved why STHU should not have been adapted to certain grammatical purposes quite as much as STHI. In fact we see a beginning in SPHÂ and SPHÎ, where we have the causative formed from SPHU, scil. sphâvayati and not sphâyayati; likewise in derivatives such as visphâra and visphâla, where the root has become SPHUR and SPHUL.[1] Although, therefore, we may distinguish grammatical varieties of the same root from parallel roots, we must remember that the former were probably the result of a grammatical selection applied to the latter.

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1. Dig.

KHAN and KHÂ (skan).

2. Plat, Weave, Sew, Bind.

UmBH (string together), KÆnT (spin), KLATH (twist, roll), GUmPH, GRAnTH, *KÆRT* (bind), DÂ (di), DÆRBH, DÆ*rm*II, NAH (NABH), PA*S*, nom., BAnDH, VABH, VÂ (vi), SÂ (si), SÎV (syû), SEV (?).

3. Crush, Pound, Destroy, Waste, Rub, Smoothe.

KRAKSH, KSHUnD, GHA*TT*, GHÆRSH, *K*ARV (chew), *KÛRN*, *GUR*, *GÛRV*, *GÆR*, TÆ*rm*H, PI*m*SH, PUTH, MÆR, MÆRKSH, MÆ*RK*, MÆ*RñG*, MÆ*RD*, MÆ*RN*, MÆRD, MÆRDH, MÆ*RS*, MÆRSH, MRAD, MRIT, MRU*K*, MRE*D*, MLÂ (fade), MLIT, MLU*K*, MLUP, VRAnD, VLÎ, *SÆR*, STÆRH.

4. Sharpen.

KSH*N*U, *K*UD (impel), TI*G*, *SÂ* (*si*), *SÂN*.

5. Smear, Color, Knead, Harden.

A*ñG*, KRU, nom. (harsh), KRUDH, TA*ñK* (coagulate), DIH, RA*ñG*, RIP, RÛKSH (harsh), LA*GG* (be ashamed), LImP.

[1] Pân. vi, 1, 47; see also vi, 1, 54, and as to apagâram from gur, vi, 1, 53.

6. Scratch.

KASH, KÆRSH (plough), *KH*UR, RAD, RIKH, LIKH (write).

7. Bite, Eat.

A*S*, GHAS, *G*AKSH, DA*mS*.

8. Divide, Share, Eat.

A*mS* (share, attain), A*S* (eat), KRÎ (buy), KSHAD, DAY, DÂ (di), BHAKSH (eat), BHA*G* (share), BHU*ñG* (?) (enjoy, eat and drink), *S*Â (give).

9. Cut.

KU*T*, KU*TT*, KÆ and SKÆ, KÆnT, KHA*ND*, *KH*Â (*kh*i), *KH*InD, TAKSH (fashion), TVAKSH, PI*mS* (fashion, adorn), BHInD, LÛ, VAP (shear), VÆRDH, VRA*SK*, *S*AT, *S*ÅS.

10. Gather, Observe.

*K*I (*k*ây), *K*IT, *K*INT.

11. Stretch, Spread.

ÆñG, TAN, TÂ, TÂY, PRATH, YAT, STAN (thunder).

12. Mix.

PÆ*ñK*, MIKSH, MI*S*.

13. Scatter, Strew.

KÎRT (praise), KÆ, *KH*UR, DHVA*m*S, RÛSH, VAP (sow), SÂ (sow), STÆ.

14. Sprinkle, Drip, Wet.

UKSH, UnD, KNÛ, KLInD, GAL (drip), GHÆ, GHRÂ (sniff), *K*YUT, TU*S*, PRUSH, MIH, VÆRSH (rain), *S*ÎK, *SK*UT, SI*ñK*, STU, nom.

15 a. Shake, Tremble, Quiver, Flicker.

KAMP, KSHUBH, *GAMH* and *G*EH (struggle), TA*m*S, DUDH, DHŮ, DHÛP (smoke), BHUR (flicker), MAnTH (fire), MISH and MÎL (wink), RE*G*, VYATH, SPAND.

15 b. Shake (mentally).

KUP (shake with anger), TRAP (be abashed), TRAS (tremble with fear), DHŮ (see)?, VI*G* (tremble), *S*RU (hear).

16. Throw down, Fall.

DHUR, DHÛRV, DHRU, DHVAL, DHVÆR, BHRA*mS*, BHRESH, SRA*mS*, HUR, HÛR*KH*, HRU, HVAL, HVÆR (crooked).

17. Fall to pieces.

KAD (?), *S*AT (*sâtay*, caus. of *sad*), *S*AD, *S*Î.

18. Shoot, Throw at.

AS, ISH, KSHIP, S*ÆG* (send).

19. Pierce, Split.

T*Æ*nD (TRU*T*), NIKSH, VIDH, VYADH, *S*NATH.

20. Join, Fight, Check.

NAS, NI*M*S (kiss), MITH, MIL, YU, YU*ñG*, YUDH (fight), YUP (check).

21. Tear.

KUSH, DAL, D*Æ*R, PA*T*, B*Æ*RH and V*Æ*RH (tear up, also tear together, make strong, big? see 36), RI*S*, LI*S*, LU*NK*, SKU (pick).

22. Break, Smash.

BHA*ñG*, RU, RU*G*, RUP, LUmP.

23. Measure.

MÂ, MI (*minoti*, fix).

24. Blow.

DHAM, DHMÂ, VÂ, *S*USH (dry), *S*VAS.

25. Kindle.

InDH, DHUKSH.

26. Milk, Yield.

DUH.

27. Pour, Flow, Rush.

*Æ*RSH, KSHAR, KSHAL (wash), DHÂV, DHAV (rinse), NED (nad), PRU, PLU (float), RÎ, SNÂ (bathe), SNU, S*ñ*YAD, SRU, HU.[1]

28. Separate, Free, Leave, Lack.

TYA*G*, MU*ñK*, YA*G* (sacrifice), YU (yuyoti), YU*KH*, RAKSH (keep off), RAH, RI*ñK*, VI*ñK*, VInDH, *S*AD (be eminent), *S*I*m*SH, HÂ.

[1] Cf. â-hâvas, jug, χέω, f u n d o.

29. Glean.

U*ÑKH.*

30. Choose.

VÆ.

31. Cook, Roast, Boil.

PA*K*, BHÆ*GG* (roast), *S*Æ, *S*RÂ, *S*RÎ.

32. Clean.

DÂ, NI*G* (wash), PÛ, PÛ*G* (?), *S*UnDH, *S*UmBH.

33. Wash.

KSHAL, DHÂV, NI*G* (nag), SNÂ.

34. Bend, Bow.

A*ñK*, UB*G*, KU*ñK*, KÛ*N*, NAM, BHU*G*.

35. Turn, roll.

LU*TH*, VAK, VA*ñK* (crooked), VAL, VISH*T* and VESH*T* (wrap), VÆT.

36. Press, Fix.

KHÂD (chew), KHInD (oppress), BA*m*H, BÂDH, BÆH (fix, see 21), MÛR*KH*, MYAKSH (cling), VÂH, VLA*ñ*G (press), VLÎ, STÎ and STYÂ (to become pressed and hard).

37. Squeeze.

A*m*H, nom., ÎH (eager), PI*ND*, PIBD (fasten), PÎ*D*, SU.

38. Drive, Thrust.

A*G*, Î*G*, E*G*, KAL, TU*K*, nom. (generate), TU*ñG*, TUnD, NUD, VA*G* (to be strong), HI.

39. Push, Stir, Live.

Î*D* (pray), ÎR, ÆD, GHÛR*N*, *K*AK, *K*UP, *K*ESH*T*, *K*YU, *G*I (quicken), *G*INV, *G*ÎV, *G*Û, *G*YÂ (live), MÎV, MUH, MÛ, LU*D*, LUL, VRÂDH (strong), SŬ (generate), SŬD (?).

40. Burst, Gush, Laugh, Beam.

Æ*K*, KAS, KÂ*S*, *G*AKSH (laugh), *G*YUT, TAK, TVISH, DIV (dyu), DÎ, DÆRP (exult), DYU, DYUT, NABH, PHAR, PHAL, MAnD (rejoice), MUD, VAS (*ukkh*ati), SPHA*T*,

SPHAR, SPHAL, SPHU*T*, SPHUR, SPHUL, SPH*Æ*, SMI (smile), HAS (laugh).

41. Dress.

VAS.

42. Adorn.

BHÛSH.

43. Strip, Remove.

V*Æñ*G.

44. Steal.

*K*UR, TÂ (tây), MUSH, LU*nTH*, STÂ (stl̊, stây).

45. Check.

YUP, RUnDH, SIDH.

46. Fill, Thrive, Swell, Grow strong.

PUSH, PÛR, P*ÆN*, P*Æ*, PRÂ, PRÎ, RAP*S*, *S*Û, *S*VÂ, *S*VI.

47. Cross.

TIR, TUR, TUL, TÛRV, T*Æ*, TRÂ, TVAR, PÂRAY, P*Æ* (cross, be busy?).

48. Sweeten.

SVĂD, cf. SÛD.

49. Shorten.

HRAS.

50. Thin, Suffer.

K*ÆS*, KLI*S*.

51. Fat, Stick (love).

MInD (love), MED, SNIH (love).

52. Lick.

RIH, LIH.

53. Suck, Nourish.

*K*ÛSH, DUH, DHÂ, DHÎ, DHINV.

54. Drink, Swell.

PÂ, PINV, PÎ, PYÂ (swell), SPHÂ (fatten).

55. Swallow, Sip.

GIR, GIL, G*Æ*, GRAS, *K*AM and *SK*AM.

56. Vomit.

VAM.

57. Chew, Eat.

AD (?), KHÂD, *K*ARV, *KÛRN*, *G*AmBH, PSÂ, BHARV, BHAS.

58. Open, Extend.

VYA*K* (VI*K*), *S*VA*ñK*.

59. Reach, Strive, Rule, Have.

AKSH, A*mS*, ÂP, ÎKSH (see), Î*S* (rule), *ÆñG*, GALBH, GÆRDH, GRABH, GLAH (gamble), GHA*T*, DAGH, NAKSH, NA*mS*, YAKSH (hunt), YAT, RAmBH, LAmBH, VInD, VÎ.

60. Conquer, Take by violence, Struggle.

KSHI (possess), *G*I, *GY*Â, DAM, VAN, VISH, SAN, SP*Æ*, SP*Æ*RDH, SP*Æ*RH.

61. Perform, Succeed.

RÂDH, SÅDH, SIDH.

62. Attack, Hurt.

AM, KSHA*N*, KSHAP (abstain), KSHÎ (destroy), DAmBH, DÛSHay, DRUH, MÎ, RISH, VADH.

63. Hide, Dive.

GÅH (GADH, GABH), GUH, *K*AT, *G*AH (?), HNU.

64. Cover, Embrace.

*KH*AD, VÎ and VYÂ, V*Æ*, *S*RISH, *S*LISH, *S*VA*ñK*, SKU, STHAG.

65. Bear, Carry.

ÛH, KSHAM, DH*Æ*, BH*Æ*, VAH, SAGH, SAH (can), H*Æ*.

66. Can, Be strong.

*G*AN (beget), *GÑ*Â (know), TU, DAKSH, PAT, MA*m*H, VÎ*D* (strengthen), *S*AK (*S*IKSH).

67. Show.

DI*S*, SÛ*K*.

68. Touch.

SP*ÆS* (P*ÆS*, nom.).

69. Strike.

KU*NTH*, GHAN, TA*D*, HAN, HI*MS*.

70. Ask.

NÂTH, NÂDH (in distress), PṚA*KH* (pra*s*), YÂ*K*.

71. Watch, Observe.

ÛH, DÆ, DÆ*S*, PÂ (protect), *S*AM.

72. Lead.

ARH (be first), NÎ.

73. Set.

DADH, DHÂ, SKAmBH, STAmBH.

74. Hold, Wield.

DHÆ, YAM.

75. Give, Yield.

DAD, DÂ, DÂ*S* (dăsasya, honor), RAnDH (submit), RÂ, RÂS.

76. Cough.

KÂS (kas, burst).

77. Thirst (dry).

TÆRSH.

78. Hunger.

KSHUDH.

79. Yawn.

*G*ÆRMBH.

80. Spue.

KSHU (sneeze), *KH*ÆnD, SH*TH*ÎV.

81. Fly.

DÎ (*D*Î), PAT (fall).

82. Sleep.

DRÂ, SAS, SVAP.

83. Bristle, Dare.

DHÆRSH, SÆRDH, HÆRSH (rejoice).

84. Be angry, Harsh.

KUP (shake), KRUDH, RUSH.

85. Breathe.

AN, AH (?), *S*VAS.

86. Speak.

AH (breathe, say), GAD, *G*AP (whisper), *G*ALP (murmur), BRÛ, BHA*N*, BHAN, BHÂSH, RAP (chatter), LAP, VA*K*, VAD, *S*AP (curse), *S*ABD, *S*A*m*S (praise), *S*ÂS, *S*ISH (teach).

87. See.

ÎKSH, KÛ, KHYÂ, *K*AKSH, D*Æ*, D*ÆS*, PA*S*, SPA*S*.

88. Hear.

*S*RU (shake), *S*RUSH.

89. Smell, Sniff.

GHRÂ, cf. GH*Æ*.

90. Sweat.

SVID.

91. Seethe, Boil.

KVATH, YAS, YESH.

92. Dance.

NA*T*, N*ÆT*.

93. Leap.

KÛRD, KRÎ*D* (play), KHA*ÑG* (limp), *KAÑK*, TVAṄG, PHA*N*, LANOH, VALG, *S*AL, *SAS*, SKAND.

94. Creep.

TSAR, RIṄKH, RIṄG.

95. Stumble.

SKHAL, SRIDH.

96. Stick.

LAG (attach), LÎ (cling), SA*K* (attend), SA*ñG*, SAP (attend), SEV (attend).

97. Burn.

USH (vas?), KÛ*D* and KÛL, KSHÂ, GH*Æ*, *G*VAR, *G*VAL, TAP, DAH, DŮ, PLUSH, HAR (love?), HÎ*D*, H*Æ* (be angry), HEL, HRÎ (be ashamed).

98. Dwell.

VAS, VI*S*.

99. Stand.

STHÂ.

100. Sink, Lie, Fail.

DUSH (fail), PAD, MA*GG*, *S*Î (lie), *S*YÂ (*S*Î), SAD, SRĬV (dry, fail).

101. Swing.

ÎṄKH, KHEL, VIP.

102. Hang down, Lean.

RAMB, LAMB, *S*RAmBH, *S*RI (lean).

103. Rise up, Grow.

ÆnDH, EDH, RÂDH, RUDH, RUH, VAKSH, VÆRDH.

104. Sit.

ÂS.

105. Toil.

KLAM, *S*AM, *S*IM.

106. Weary, Waste, Slacken.

GLÂ, *G*AS, TAND, TAM, TÎM, DÂS (?), N*A*S (perish), VÂ, *S*AM (quiet), *S*RATH, *S*RAM, *S*LATH, STÎM (stiffen).

107. Rejoice, Please.

AV (ûta), U*K*, KAN, KAM, KÂ, KÂṄKSH, KRATH, KRÎ*D* (play), *K*AN, *G*USH, TUSH, T*Æ*RP, DÎV (play), NAND, RA*N*, RA*N*V, RAM, LAM, LAL, LAS.

108. Desire, Love.

ISH, LASH, LUBH, VA*S*, VÂ*ÑKH*, VEN, SPÆRH, HARya.

109. Wake.

GÆ, *G*ÂGÆ, BUDH.

110. Fear.

BHÎ, BHÎSH, BHYAS.

111. Cool, Refresh.

HLÂD.

112. Stink.

KUTH, KVATH (boil), PÛY.

113. Hate.

DVISH, PÎY.

114. Know.

*GÑ*A, BUDH, MÂ, VAT, VID.

115. Think.

KÅLAY, DHÎ, DHYÂ, MAN, MNÂ (remember), *SAṄK*, SMÆR (remember), see MÆR.

116. Shine.

KÂ*S*, KHA*K*, KHYÂ (KSÂ), *K*AKÂS, *K*AND, *KH*AnD, *G*YUT, DÎV (play), DÎ (DÎDÎ), DÎP, DYU, DYUT, DHÎ (DÎDHÎ), DHYÂ, BHAND, BHÂ, BHÂM (be angry), BHAS, BHRÂ*G*, RÂ*G*, RU*K*, LOK, LO*K*, *SUK*, *S*UnDH, *S*UmBH, *SK*AND, *S*VIT, SVAR.

117. Run.

TVAR (hasten), DRAM, DRÂ, DRU, DHAN, DHANV, DHÅV, RA*m*H.

118. Move, Go.

AṄG, A*T*, AT, I, IṄG, IN, INV, IL (come), Î, ÎSH, *Æ* (*ÆRKKH*), *Æ*RSH, KRAM, GAM, GÂ, *K*AR, *K*AL, *GÆ*, *G*RI, DHRÂ*G*, NU, PAD, BHRAM, YÂ, YÂD (?), LA*D*, VRA*G*, SÆ, SÆRP, STIGH, HÂ.

119 a. Noise (inarticulate).

KÛ*G*, K*Æ*RP (lament), KRAND, KRU*S*, KVA*N*, KSHVI*D* and KSHVID (hum), KHAR*G* (creak), GAR*G* (roar), GARD (shout), GARH (chide), GU, GU*Ñ*G (hum), GÛRD, GÛRDH, GHUSH, TAR*G*, DÎV (lament), DHVAN, NAD, NARD (bellow), NInD, PRUTH (snort), B*ÆRM*H (roar), BHARTS (blame), BHASH (bark), MÂ (bellow), RA*T* (howl), RÂ (bark), RÅS (roar), RIPH (snarl), RU, RUD, VÂ*S* (bellow), VRA*N*, *SIÑG* (twang), SPHÛR*G* (rumble), SVAN, SVAR, HÛ, HESH (whinney), HRÂD, HRESH, HLÂD, HVÂ.

119 b. Noise (musical).

GÂ (gî, sing), GUR (greet), G*Æ* (sing), *GÆ*, NÛ (praise), PAN (praise, admire), RIBH (sing), VAND, *S*LÂGH, STU, STUBH.

120. Do.

K*Æ* (SK*Æ*, *κείρω*, O. H. G. skiru), K*ÆP*, TAKSH, TVAKSH, DU (zauen), RA*K*.

121. Be.

AS (breathe), BHÛ (grow), VAS (dwell), VÆRT (turn).

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59. AKSH, reach.
118. AÑG, move.
34. A*ñK*, bend.
38. A*G*, push, drive.
5. A*ñG*, smear, adorn.
118. A*T*, move, wander.
118. AT, move, wander.
57. AD, eat.
85. AN, breathe.
62. AM, attack.
118. AY, see Î.
72. ARH, lead, be first, deserve.
107. AV, please.
7. A*S*, eat; 8.
8. A*mS*, share, attain; 59.
121. AS, be.
18. AS, throw, shoot.
85. AH, breathe (?); 86, speak.
37. A*m*H, squeeze; cf. NAH.

59. ÂP, reach.
104. ÂS, sit.

118. Î, move, go; see AY.
118. I, move, send; IN, INV.
118. IÑG, move, intrans.
25. InDH, kindle.
118. IN, move, go; see I.
118. INV, move; see I.
118. IL, come.
108. ISH, desire.
18. ISH, throw, shoot forth.

59. ÎKSH, reach; see 87.
101. ÎÑKH, swing.
38. Î*G*, drive.
39. Î*D*, urge, pray; see ÆD.
39. ÎR, stir.
39. ÎL, stir.
59. Î*S*, reach, rule.
118. ÎSH, move.
37. ÎH, pant for, desire.

14. UKSH, sprinkle.
103. UKSH, grow; see VAKSH.
107. U*K*, please.
29. U*ÑKH*, glean.
14. UnD, wet.
34. UB*G*, bend, force.
2. UmBH, string together; see NABH.
97. USH, burn.

65. ÛH, carry; see VAH.
71. ÛH, watch.

118. Æ, Æ*KKH*ATI, go, advance.
40. Æ*K*, beam, praise.
11. Æ*ñG*, stretch; 59, reach.
39. ÆD, stir.
103. ÆnDH, rise, grow.
27. ÆSH, rush; 118.

38. E*G*, drive, stir.
103. EDH, rise, grow.
118. ESH, see ÎSH.

17. KAD, fall, decay.
107. KAN, KÂ, rejoice.
107. KAM, rejoice, love.
15. KAMP, shake.
38. KÅLAY, drive, produce.
115. KÅLAY, reckon.
6. KASH, scratch.
40. KAS, burst open.
107. KÂ, see KAN.
107. KÂÑKSH, love, desire.
40. KÂ*S*, shine; 116.
76. KÂS, cough.
13. KÎRT, praise.
34. KU*ñK*, bend, curl.
9. KU*T*, cut.
9. KU*TT*, caus. cut, divide.
69. KU*NTH*, strike.
112. KUTH, stink; see KVATH, seethe.
15[b]. KUP, shake with anger; 84.

21 KUSH, tear.
87. KÛ, see.
119. KÛ*G*, noise, hum.
97. KÛ*D*, KÛL, burn.
34. KÛ*N*, bend, shrink.
93. KÛRD, leap.
9. KÆ, cut, make; 120.
9. KÆnT, cut.
2. KÆnT, spin, possibly connected with KÆnT, cut into small slices, as in DÂ, cut, DÂ, bind.
119. KÆP, noise, lament (?).
50. KÆ*S*, become thin.
6. KÆSH, scratch, plough.
13. KÆ, scatter.
120. KÆP, do, fit.
14. KNÛ, wet.
3. KRAKSH, crush.
107. KRATH, rejoice.
119. KRAND, noise, cry.
118. KRAM, go, stride.
8. KRÎ, buy.
93. KRÎ*D*, leap, play; 107.
5. KRU (?), smear, harden.
84. KRUDH, be angry; 5.
119. KRU*S*, noise, shout.
2. KLATH, twist, roll.
119. KLAND, noise, cry.
105. KLAM, toil, weary.
14. KLInD, wet.
50. KLI*S*, become thin, suffer.
119. KVA*N*, noise, sound.
91. KVATH, boil, seethe.
62. KSHA*N*, hurt.
8. KSHAD, divide.
62. KSHAP, abstain.
65. KSHAM, bear, endure.
27. KSHAR, flow.
27. KSHAL (flow), wash; 33.
97. KSHÂ, burn.
60. KSHI, conquer, take, have.
62. KSHÎ, destroy.
18. KSHIP, throw forth.
80. KSHU, sneeze.
3. KSHUnD, crush.
78. KSHUDH, be hungry.
15. KSHUBH, shake, quake.
4. KSH*N*U, sharpen.
119. KSHVI*D*, hum.
119. KSHVID, hum.

116. KHA*K*, shine.
93. KHA*Ñ*G, limp, halt.
9. KHA*ND*, cut.

1. KHAN and KHÂ (skan), dig; see scratch, 6.
119. KHAR*G*, noise, creak.
36. KHÂD, press, chew; 57.
36. KHInD, press, pierce.
101. KHEL, swing.
87. KHYÂ, see; see KÂ*S*, 116.

86. GAD, speak.
63. GADH, dive; see GÂH.
63. GABH, dive; see GÂH.
118. GAM, GA*KKH*, go.
119. GAR*G*, noise, roar.
119. GARD, noise, shout, exult.
119. GARH, noise, chide.
14. GAL, drip.
59. GALBH, reach, dare.
118. GÂ, go.
119b. GÂ (gî), sing.
63. GÂH, dive, enter.
55. GIR, GIL, swallow; see GÆR.
119. GU, noise, sound.
119. GU*Ñ*G, hum.
2. GUmPH, twine.
119b. GUR, greet; see GÆR.
63. GUH, hide.
119. GÛRD, noise, shout, exult.
119. GÛRDH, noise, shout, exult.
109. GÆ, wake, GÂGÆ.
59. GÆDH, reach, be greedy.
119b. GÆ, sing.
55. GÆ, swallow; see GIR.
2. GRAnTH, knot.
59. GRABH, GRAH, reach, seize.
55. GRAS, swallow.
59. GLAH, gamble.
106. GLÂ, weary.

59. GHA*T*, reach, strive.
3. GHA*TT*, rub.
69. GHAN, see HAN.
7. GHAS, eat.
119. GHUSH, noise, sound.
39. GHÛR*N*, stir, waver.
14. GHÆ, drip.
97. GHÆ, burn (*ghrinâ*, *gharma*); see HÆ.
3. GHÆSH, rub.
89. GHRÂ, smell, sniff; see GHÆ, drip.

39. *K*AK, stir, quake.
116. *K*AKÂS, shine.
87. *K*AKSH, see, speak; 116.

93. *KAÑK*, leap, dance.
63. *KAT*, hide.
107. *KAN*, rejoice.
116. *KAND*, shine; see *SKAND*.
55. *KAM*, sip; see *SKAM*.
118. *KAR*, move, go.
57. *KARV*, chew; see *KÛRN*; 3.
118. *KAL*, move, go.
10. *KI* (*khây*), gather, observe.
10. *KIT*, gather, perceive.
10. *KINT*, gather, think.
4. *KUD*, sharpen, impel.
39. *KUP*, stir.
44. *KUR*, steal.
57. *KÛRN*, pound; 3.
53. *KÛSH*, suck, draw.
2. *KRT*, join, bind.
39. *KESHT*, stir.
39. *KYU*, stir.
14. *KYUT*, drip.

64. *KHAD*, cover.
107. *KHAnD*, rejoice, seem; 116.
9. *KHÂ* (*khi*), cut.
9. *KH* InD, cut.
6. *KHUR*, scratch; 13, scatter.
80. *KHRnD*, spue.

15. *GAMH*, shake; see *GEH*.
7. *GAKSH*, eat.
40. *GAKSH*, burst, laugh; see HAS.
66. *GAN*, *GÂ*, can, beget, be born.
86. *GAP*, whisper, speak.
57. *GAmBH*, chew, crush.
86. *GALP*, murmur, speak.
106. *GAS*, weary.
63. *GAH*, hide.
109. *GÂGR*, see *GR*.
60. *GI*, conquer, overcome.
39. *GI*, *GINV*, stir, quicken.
39. *GÎV*, stir, quicken, live.
3. *GUR*, waste.
107. *GUSH*, enjoy.
39. *GÛ*, stir, be swift.
3. *GÛRV*, rub, waste.
118. *GR*, go, approach.
79. *GRMBH*, yawn.
119b. *GR*, sing.
3. *GR*, rub, waste; see *GUR*.
15. *GEH*, struggle.
66. *GÑÂ*, can, know; 114.
60. *GYÂ*, overcome, fail.
39. *GYÂ*, live.
40. *GYUT*, beam; 116.

118. *GRI*, move, go.
97. *GVAR*, burn.
97. *GVAL*, burn.

81. *DÎ*, fly; see DÎ.

40. TAK, burst, rush.
9. TAKSH, cut, fashion; 120.
5. TA*ñK*, harden, coagulate.
69. TA*D*, strike; cf. TRnD (?).
11. TAN, stretch, TÂ; see STAN.
106. TAND, weary.
97. TAP, burn, heat.
106. TAM, weary, faint.
119. TAR*G*, noise, threaten.
15. TA*m*S, shake.
44. TÂ (tây), steal; see STÂ (stî, stây).
11. TÂ, TÂY, stretch; see TAN.
4. TI*G*, sharpen.
106. TÎM, weary, quiet.
47. TIR, see TR.
66. TU, be strong.
38. TU*K*, drive, generate.
38. TU*ñG*, drive, thrust.
38. TUnD, drive, thrust.
47. TUR, see TR.
47. TÛRV, cross, overcome.
47. TUL, cross, lift.
47. TUL, see TR.
14. TU*S*, drip.
107. TUSH, be pleased.
47. TÛRV, cross, conquer.
19. TRnD, pierce.
107. TRP, be pleased.
77. TRSH, thirst (dry).
3. TR*m*H, crush.
47. TR, cross; TIR, TUR.
28. TYA*G*, leave.
15b. TRAP, shake with fear.
15b. TRAS, tremble with fear.
47. TRÂ, cross, rescue.
19. TRU*T*, split.
9. TVAKSH, cut, fashion; 120.
93. TVAÑG, leap.
117. TVAR, hasten; cf. 47.
40. TVISH, gush, beam.
94. TSAR, creep.

66. DAKSH, be strong.
59. DAGH, reach.
75. DAD, see DÂ.
73. DADH, see DHÂ.
62. DAmBH, hurt.
60. DAM, rule.

8. DAY, divide, share.
21. DAL, tear.
7. DA*mS*, bite.
106. DÅS, weary, waste.
97. DAH, burn.
75. DÂ, give; DAD.
2. DÂ (di), bind, possibly the same as DÂ (di), share, cut.
8. DÂ (di), divide, share.
32. DÂ, clean.
75. DÂ*S*, give, offer.
40. DIV, shine; 116.
67. DI*S*, show.
5. DIH, smear, knead.
81. DÎ, fly; also *DÎ*.
40. DÎ, DÎDÎ, shine; 116.
116. DÎP, shine.
107. DÎV, play.
119. DÎV (dev), noise, lament.
97. DÛ, burn.
120. DU, do.
15. DUDH, shake.
100. DUSH, fail.
26. DUH, milk, yield; 53, suck.
62. DÛSHay, hurt.
71. DÆ, watch, heed; 87.
40. DÆP, exult.
2. DÆBH, bunch, bind.
71. DÆ*S*, watch, see; 87.
2. DÆ*m*H, bind, make firm.
21. DÆ, tear.
40. DYU, see DÎV; 116.
40. DYUT, burst, shine; 116.
117. DRAM, run.
117. DRÂ, run.
82. DRÂ, sleep.
117. DRU, run.
62. DRUH, attack.
113. DVISH, hate.

117. DHAN, run.
117. DHANV, run.
24. DHAM, blow.
73. DHÂ, set; DADH.
53. DHÂ, suck; see DHÎ.
27. DHÅV, run; 117.
27. DHÂV, rinse; 33, wash.
53. DHI, DHINV, suck, nourish.
115. DHÎ, think; see DÎDHÎ; 116.
25. DHUKSH, kindle.
16. DHUR, throw down.
15ab. DHÛ, shake, see.
15. DHÛP, smoke.
16. DHÛRV, throw down.
65. DHÆ, bear, hold; 74.
83. DHÆRSH, bristle, dare.
24. DHMÂ, blow.
115. DHYÂ, think; 116.
118. DHRÅ*G*, move swiftly.
16. DHRU, throw down.
119. DHVAN, noise, sound.
16. DHVAL, throw down.
13. DHVA*m*S, scatter.
16. DHVÆ, throw down.

59. NAKSH, reach, attain.
92. NA*T*, dance.
119. NAD, noise; sound; see NED.
107. NAND, rejoice.
2. NABH, see NAH.
40. NABH, burst.
34. NAM, bend, bow.
119. NARD, noise, bellow.
106. NA*S*, perish.
59. NA*mS*, reach, attain.
20. NAS, join.
2. NAH, bind.
70. NÂTH, see NÂDH.
70. NÂDH, ask, beg: cf. NAH, be straitened (?).
20. NI*MS*, kiss.
19. NIKSH, pierce.
32. NI*G*, clean, wash.
119. NInD, noise, revile.
72. NÎ, lead.
119b. NÛ, sing, praise.
118. NU, move, go.
38. NUD, drive, thrust.
92. NÆRT, dance.
27. NED, flow; see NAD.

31. PA*K*, cook.
21. PA*T*, tear.
81. PAT, fly, fall.
66. PAT, be strong, rule.
118. PAD, go, sink; 100.
119b. PAN, sing, praise.
87. PA*S* and SPA*S*, see.
2. PA*S*, bind.
54. PÂ, drink; see PÎ.
71. PÂ, watch, protect.
54. PÎ, PINV, swell; see PYÂ.
37. PI*ND*, squeeze.
37. PIBD, squeeze, fasten.
9. PI*mS*, cut, fashion, adorn.
3. PI*m*SH, crush.
37. PÎ*D*, squeeze.
113. PÎY, hate.

3. PUTH, crush.
46. PUSH, fill, thrive.
32. PÛ, clean.
32. PÛ*G*, worship.
112. PÛY, stink.
46. PÛR, see PÆR.
47. PÆR, cross, pass; caus. pârayati.
47. PÆR, be busy (?).
12. PÆ*ñK*, mix (plat ?).
68. PÆ*RS*, see SPÆ*RS*.
46. PÆR, PÛR, PÆ*RN*, fill; see PRÎ.
54. PYÂ, fill; see PÎ.
70. PRA*KH*, ask.
11. PRATH, spread.
46. PRÂ, fill.
46. PRÎ, fill, please.
27. PRU, flow.
119. PRUTH, noise, snort.
14. PRUSH, sprinkle.
27. PLU, flow, float.
97. PLUSH, burn; see PRUSH.
57. PSÂ, chew, devour; see BHAS.

93. PHA*N*, leap.
40. PHAR, burst, scatter.
40. PHAL, burst.

2. BAnDH, bind.
36. BA*m*H, press, make firm.
36. BÂDH, press, oppress.
109. BUDH, wake, know; 114.
119. BÆ*RM*H, roar; see VÆ*RM*H.
36. BÆRH, make firm.
21. BÆRH, tear up; and VÆRH.
86. BRÛ, speak.

8. BHAKSH, share, eat.
8. BHA*G*, divide, share.
22. BHA*ñG*, break.
86. BHA*N*, speak.
86. BHAN, speak.
116. BHAND, shine.
119. BHARTS, noise, revile.
57. BHARV, chew, devour.
119. BHASH, noise, bark.
57. BHAS, chew, devour.
116. BHÂ, shine.
116. BHÂM, be angry.
86. BHÂSH, speak.
116. BHÂS, shine.
9. BHInD, cut.
110. BHÎ, fear.
110, BHÎSH, fear.
34. BHU*G*, bend.

8. BHU*ñG*, enjoy, eat and drink.
15. BHUR, shake, flicker.
121. BHÛ, be.
42. BHÛSH, adorn.
65. BHÆR, bear.
31. BHÆ*GG*, roast.
110. BHYAS, fear; see BHÎ.
118. BHRAM, move, roam.
16. BHRA*mS*, fall.
116. BHRÂ*G*, shine.
16. BHRESH, fall, totter.

100. MA*GG*, sink.
15. MAnTH, shake, kindle fire.
40. MAnD, gush, rejoice.
115. MAN, think.
66. MA*m*H, be strong, great, liberal, give; cf. MAGH.
23. MÂ (mi), measure; 114.
119. MÂ, noise, bellow.
23. MI (measure), fix.
62. MÎ, hurt.
12. MIKSH, mix.
20. MITH, join alternately.
51. MInD, fatten, cling, love; see MED.
20. MIL, join.
12. MI*S*, mix.
15. MISH, wink.
14. MIH, wet.
15. MÎL, wink.
39. MÎV, MÛ, stir.
28. MU*ñK*, free (MOKSH).
40. MUD, rejoice.
44. MUSH, steal.
39. MUH, stir, confuse.
39. MÛ, see MÎV.
36. MÛR*KH*, press, harden.
3. MÆR, waste, die.
3. MÆR, MÆ*RN*, crush.
3. MÆRKSH, rub.
3. MÆ*RK*, crush.
3. MÆ*ñG*, rub, wipe.
3. MÆ*RD*, be soft, gracious.
3. MÆ*RN*, crush.
3. MÆRD, rub.
3. MÆRDH, waste, neglect.
3. MÆ*RS*, rub, touch.
3. MÆRSH, waste, neglect.
51. MED, fatten.
115. MNÂ, think, remember.
36. MYAKSH, cling, press close.
3. MRAD, crush.
3. MRIT, crush.

3. MRU*K*, waste, set.
3. MR*ED*, soften, please.
3. MLÂ, fade.
3. MLIT, crush.
3. MLU*K*, waste, set.
3. MLUP, waste, set.

59. YAKSH, strive, hunt.
28. YA*G*, sacrifice.
11. YAT, stretch, strain, struggle; 59.
74. YAM, hold, wield.
91. YAS, seethe; YESH.
118. YÂ, go.
70. YÂ*K*, ask.
118. YÂD, move together (?).
20. YU, join.
28. YU, separate (YU*KH*).
20. YU*ñG*, join.
20. YUDH, join in fight.
20. YUP, check; 45.
91. YESH, see YAS.

28. RAKSH, free, protect.
120. RA*K*, do, make.
5. RA*ñG*, smear, color.
119. RA*T*, noise, howl.
107. RA*N*, shout, rejoice.
107. RA*N* V, rejoice.
6. RAD, scratch, dig.
75. RAnDH, yield, subject.
86. RAP, speak, chatter.
46. RAP*S*, fill.
59. RAmBH, reach after, take.
107. RAM, rejoice.
102. RAMB, hang down.
119. RAS, noise, roar; see RÂS.
117. RA*m*H, run.
28. RAH, leave.
75. RÂ, give.
119. RÂ, noise, bark.
116. RÂ*G*, rule, shine.
61. RÂDH, succeed; 103.
119. RÂS, noise, roar; see RAS.
75. RÂS, give.
27. RÎ, flow.
6. RIKH, scratch.
94. RIṄKH, RIṄG, creep.
28. RI*ñK*, leave.
5. RIP, smear.
119. RIPH, noise, snarl.
119b. RIBH, sing, praise.
21. RI*S*, tear.
62. RISH, hurt.
52. RIH, lick.

119. RU, noise, cry.
22. RU, break.
116. RU*K*, shine.
22. RU*G*, break.
119. RUD, noise, cry.
103. RUDH, rise, grow.
45. RUnDH, check.
22. RUP, break, hurt.
84. RUSH, be angry.
103. RUH, rise, ascend.
5. RÛKSH, be harsh.
13. RÛSH, scatter.
15. RE*G*, shake.

96. LAG, stick.
93. LAṄGH, leap.
5. LA*GG*, color, be ashamed.
118. LA*D*, move, go.
86. LAP, speak, chatter.
59. LAmBH, reach after, take.
107. LAM, rejoice; see RAM.
102. LAMB, hang down.
107. LAL, rejoice, sport.
108. LASH, desire.
107. LAS, rejoice; see RAS.
6. LIKH, scratch, write.
5. LImP, smear.
21. LI*S*, tear.
52. LIH, lick.
96. LÎ, stick.
21. LU*ÑK*, tear.
35. LU*TH*, turn, roll.
44. LU*nTH*, steal.
39. LU*D*, stir.
22. LUmP, break.
108. LUBH, desire.
39. LUL, stir, quicken.
9. LÛ, cut.
116. LOK, shine, see.
116. LO*K*, shine, see.

35. VAK, turn; see VA*ñK*.
103. VAKSH, grow; UKSH.
86. VA*K*, speak.
35. VA*ñK*, turn, crooked.
38. VA*G*, drive.
114. VAT, know (?).
86. VAD, speak.
62. VADH, hurt, slay; or BADH.
60. VAN, VÂ, conquer.
119b. VAND, sing, praise.
13. VAP, scatter, sow.
9. VAP, shear.
2. VABH, weave.

56. VAM, vomit.
35. VAL, turn.
93. VALG, leap.
108. VA*S*, desire.
40. VAS, beam, U*KKH*; see USH.
41. VAS, dress.
98. VAS, dwell; 121.
65. VAH, carry.
24. VÂ, blow.
2. VÂ (vi), weave.
106. VÂ, weary.
108. VÂÑ*KH*, desire.
119. VÂ*S*, noise, bellow.
36. VÂH, press.
VI*K*, see VYA*K*, 58.
28. VI*ñK*, separate, sift.
15[b]. VI*G*, tremble.
114. VID, know.
59. VInD, reach, find.
19. VIDH, pierce; see VYADH.
28. VInDH, lack.
101. VIP, VEP, swing.
98. VI*S*, enter, dwell.
60. VISH, struggle for.
35. VISH*T*, roll, wrap; see VESH*T*.
59. VÎ, reach, have, enjoy.
64. VÎ, cover; see VYÂ.
66. VÎ*D*, strengthen.
64. VÆ, cover.
30. VÆ, choose.
119. VÆ*M*H, roar; see BÆ*M*H.
43. VÆ*ñG*, strip.
35. VÆT, turn; 121.
103 VÆDH, grow.
9. VÆDH, cut, make.
14. VÆSH, sprinkle, rain.
21. VÆH, see BÆH.
108. VEN, desire.
35. VESH*T*, roll, wrap; see VISH*T*.
58. VYA*K* (VI*K*), open.
15. VYATH, shake.
19. VYADH, pierce.
64. VYÂ and VÎ, cover.
118. VRA*G*, move, go.
119. VRA*N*, noise, sound.
3. VRAnD, crush, weaken.
9. VRA*SK*, cut.
39. VRÂDH, stir, be strong.
36. VLAñG, press, pursue.
3. VLÎ or BLÎ, crush; 36.

66. *S*AK, be strong, can; *S*IKSH, learn.
115. *S*AÑK, think, doubt.
9. *S*AT, cut.
17. *S*AT (*s*âtay), fall.
17. *S*AD, fall.
28. *S*AD, excel.
86. *S*AP, curse.
86. *S*ABD, speak.
105. *S*AM, toil; *S*IM.
106. *S*AM, weary, quiet.
71. *S*AM, watch, observe.
93. *S*AL, leap.
93. *S*Â*S*, leap.
86. *S*A*m*S, praise.
9. *S*AS, cut.
8. *S*Â, divide, give.
4. *S*Â (*si*), sharpen.
4. *S*ÂN, whet.
86. *S*ÂS, order; *S*ISH, teach.
4. *S*I, sharpen.
119. *S*I*ÑG*, noise, twang.
105. *S*IM, toil.
28. *S*I*m*SH, leave.
17. *S*Î, fall; see *S*AD and *S*AT.
100. *S*Î, sink, lie.
14. *S*ÎK, moisten.
116. *S*U*K*, shine.
32. *S*UnDH, clean; 116.
32. *S*UmBH, clean; 116.
24. *S*USH (blow), dry; cf. *S*VAS.
46. *S*Û, *S*VÂ, *S*VI, swell.
31. *S*Æ, boil; *S*RÂ, *S*RÎ, *sr*ita and *sr*âta.
83. *S*ÆDH, dare.
3. *S*Æ (*S*RÎ?), crush, mix?
116. *S*K*A*ND, shine; see *K*AND.
55. *S*K*A*M, sip; see *K*AM.
14. *S*K UT, drip.
19. *S*NATH, pierce.
100. *S*YÂ, *S*Î, sink together, coagulate; see *S*Î.
106. *S*RATH, weary, slacken; see *S*LATH.
102. *S*RAmBH, hang down, trust.
105. *S*RAM, toil, weary.
31. *S*RÂ (*sr*î), boil; see SÆ.
102. *S*RI, lean, go to.
64. *S*RISH, see *S*LISH.
15[b]. *S*RU, shake, hear.
88. *S*RU, hear.
88. *S*RUSH, hear.
106. *S*LATH, weary, slacken.
119[b]. *S*LÂGH, sing, praise.
64. *S*LISH, embrace.
58. *S*VA*ñK*, open, spread; 64.
24. *S*VAS, blow, cf. *S*USH; 85, breathe.
46. *S*VÂ, see *S*Û.

46. *S*VI, see *S*Û.
116. *S*VIT, shine.

80. SH*TH*ÎV, spue.

65. SAGH, bear, be equal.
96. SA*K*, stick, follow.
96. SA*ñG*, stick.
100. SAD, sink, sit.
60. SAN, SÂ, conquer, win.
96. SAP, attend.
82. SAS, sleep.
65. SAH, bear, sustain.
13. SÂ, throw, sow.
2. SÂ (si), bind.
61. SÂDH, perform, succeed ; cf. SAH.
14. SI*ñK*, sprinkle.
45. SIDH, check, keep off.
61. SIDH, succeed.
2. SÎV (syû), sew.
37. SU, squeeze out.
39. SÛ, stir, generate.
67. SÛ*K*, point out.
39. SÛD, stir, impel (sweeten ?).
118. SÆ, go, flow.
18. SÆ*RG*, throw forth.
118. SÆP, move, creep.
96. SEV, cling, attend on ; 2.
93. SKAND, leap.
73. SKAmBH, fix, prop.
21. SKU, tear, pick.
64. SKU, cover.
9. SKÆ, see KÆ, cut, make.
95. SKHAL, stumble.
11. STAN, stretch, thunder.
73. STAmBH, fix, prop.
44. STÂ (sti, stây), steal.
118. STIGH, move, mount.
36. STÎ, see STYÂ.
106. STÎM, weary, stiffen.
119b. STU, sing, praise.
14. STU, drip.
119b. STUBH, sing, praise.
13. STÆ, scatter.
3. STÆH, crush.
36. STYÂ, STÎ, become pressed, hard.
64. STHAG, cover.
99. STHÂ, stand.
27. SNÂ, bathe.
51. SNIH, stick, love.
27. SNU, pour.
15. SPAND, shake, quiver.
87. SPA*S*, see ; PA*S*.
60. SPÆ, conquer, win.
60. SPÆDH, struggle, SPÛRDH.
68. SPÆ*RS*, touch.
60. SPÆH, struggle, strive ; 108.
40. SPHA*T*, burst.
40. SPHAR, SPHÆ, burst.
40. SPHAL, burst.
54. SPHÂ (sphî), swell.
40. SPHU*T*, burst.
40. SPHUR, burst.
40. SPHUL, burst.
119. SPHÛ*RG*, noise, rumble.
40. SMI, smile.
115. SMÆ, think, remember ; see MÆ.
27. SYAnD, flow, run.
2. SYÛ, see SÎV.
16. SRA*m*S, fall.
95. SRIDH, stumble, blunder.
100. SRÎV, dry, fail.
27. SRU, flow.
64. SVA*ñG*, embrace.
48. SVAD, sweeten ; see SÛD.
119. SVAN, noise, sound.
82. SVAP, sleep.
116. SVAR, shine.
119. SVAR, noise, sound.
90. SVID, sweat.

69. HAN, strike.
108. HARya, desire, love ; see GHÆ, 97.
40. HAS, laugh.
28. HÂ, leave.
118. HÂ, move, go.
38. HI, drive.
69. HI*M*S, strike, injure.
97. HÎ*D*, burn, be angry ; see HEL.
27. HU, pour libations.
16. HUR, fall.
119. HÛ, noise, call ; see HVÂ.
16. HÛR*KH*, fall, fail.
65. HÆ, carry away.
97. HÆ, burn, be angry.
83. HÆSH, bristle, rejoice.
97. HEL, burn, be angry.
119. HESH, whinney ; see HRESH.
63. HNU, hide.
49. HRAS, shorten.
119. HRÂD, noise ; see HLÂD.
97. HRÎ, burn, be ashamed.
16. HRU, fall.
119. HRESH, neigh.
111. HLÂD, cool, refresh.
119. HLÂD, noise ; see HRÂD.
16. HVAL, fall, crooked.
119. HVÂ, call ; see HÛ.
16. HVÆ, fall, crooked.

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